# Using MDAT to Create Custom Occupation Tables

Learn how to create a custom detailed occupation table by variable of interest (e.g., sex, age, race, etc.).

Steps will include selecting a dataset, a vintage (year), variables to construct a table, and downloading table for analysis.

You will also learn how to select a geography for your table and to recode variables to meet your needs.

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## What is MDAT?

Microdata Access on **data.census.gov/mdat** allows you to create custom tables that are not available in the pre-made tables on data.census.gov.

It is powered by public use microdata. This is where we take responses received from our surveys, remove personal information so you cannot identify any specific person/household, and put additional edits in place to protect the confidentiality of respondents.

Microdata Access on **data.census.gov/mdat** allows you to create these custom tables on our site without having to use your own statistical software or special programming. Instructions for using the site are available on the Microdata Access Resources page.

Before diving into microdata, here are a few tips:

- **Use pre-made tables on data.census.gov whenever possible:** The data will be more accurate in a pre-made table compared to a custom table you make. The process to find a pre-made table is also easier than to create a custom table on data.census.gov/mdat.
- **Geographic coverage in microdata is limited:** You can access data for the nation, region, division, and state. A few surveys provide data for public use microdata areas (PUMAs) and counties.

We also encourage you to check out our short video: What is Microdata and Why Should I Use It?

For more guidance on data availability and using data.census.gov, the Census API, and Microdata Access, visit our resources page.

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Email us at cedsci.feedback@census.gov for any questions.

# Table of Contents (1)

# Table of Contents (2)

# Table of Contents (3)

For this walkthrough, we will demonstrate how to create a table detailing occupation by sex.

| Occupation recode for 2018 and later based on 2018 OCC codes | Sex (SEX) | | |
|---|---|---|---|
| | Total | Male | Female |
| Total (531) | 328,239,523 | 161,594,272 | 166,645,251 |
| N/A (less than 16 years old/NILF who last worked ... | 133,182,103 | 60,920,536 | 72,261,567 |
| MGR-Chief Executives And Legislators | 1,646,437 | 1,188,307 | 458,130 |
| MGR-General And Operations Managers | 1,245,876 | 815,514 | 430,362 |
| MGR-Advertising And Promotions Managers | 64,747 | 26,647 | 38,100 |
| MGR-Marketing Managers | 627,175 | 240,986 | 386,189 |
| MGR-Sales Managers | 589,102 | 390,359 | 198,743 |
| MGR-Public Relations And Fundraising Managers | 114,727 | 37,252 | 77,475 |
| MGR-Administrative Services Managers | 70,785 | 20,587 | 50,198 |
| MGR-Facilities Managers | 136,272 | 111,550 | 24,722 |
| MGR-Computer And Information Systems Manag... | 735,113 | 511,537 | 223,576 |
| MGR-Financial Managers | 1,487,327 | 646,827 | 840,500 |
| MGR-Compensation And Benefits Managers | 21,192 | 4,605 | 16,587 |
| MGR-Human Resources Managers | 324,447 | 81,847 | 242,600 |
| Development Managers | 67,879 | 32,459 | 35,420 |

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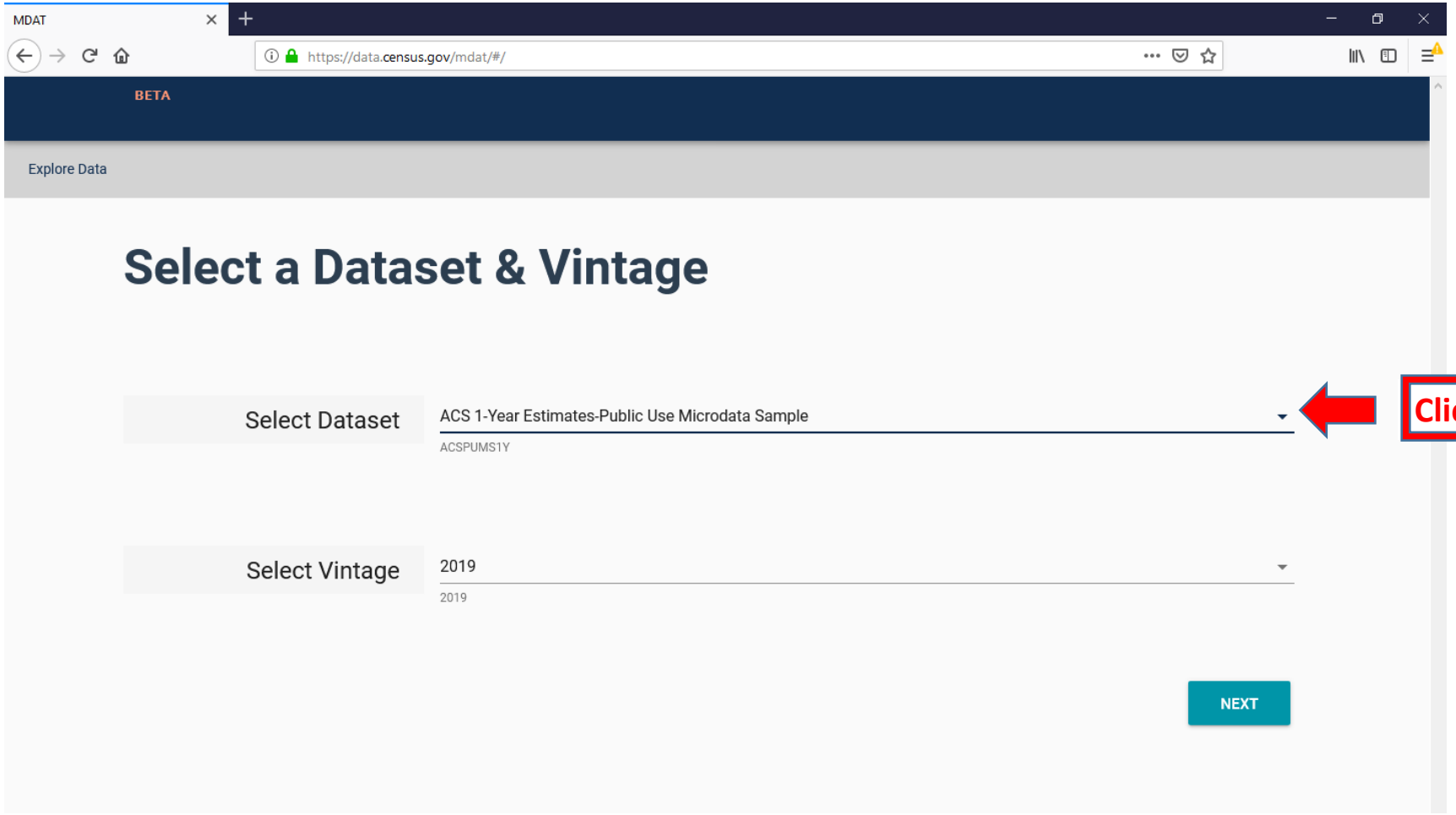
Return to Table of Contents

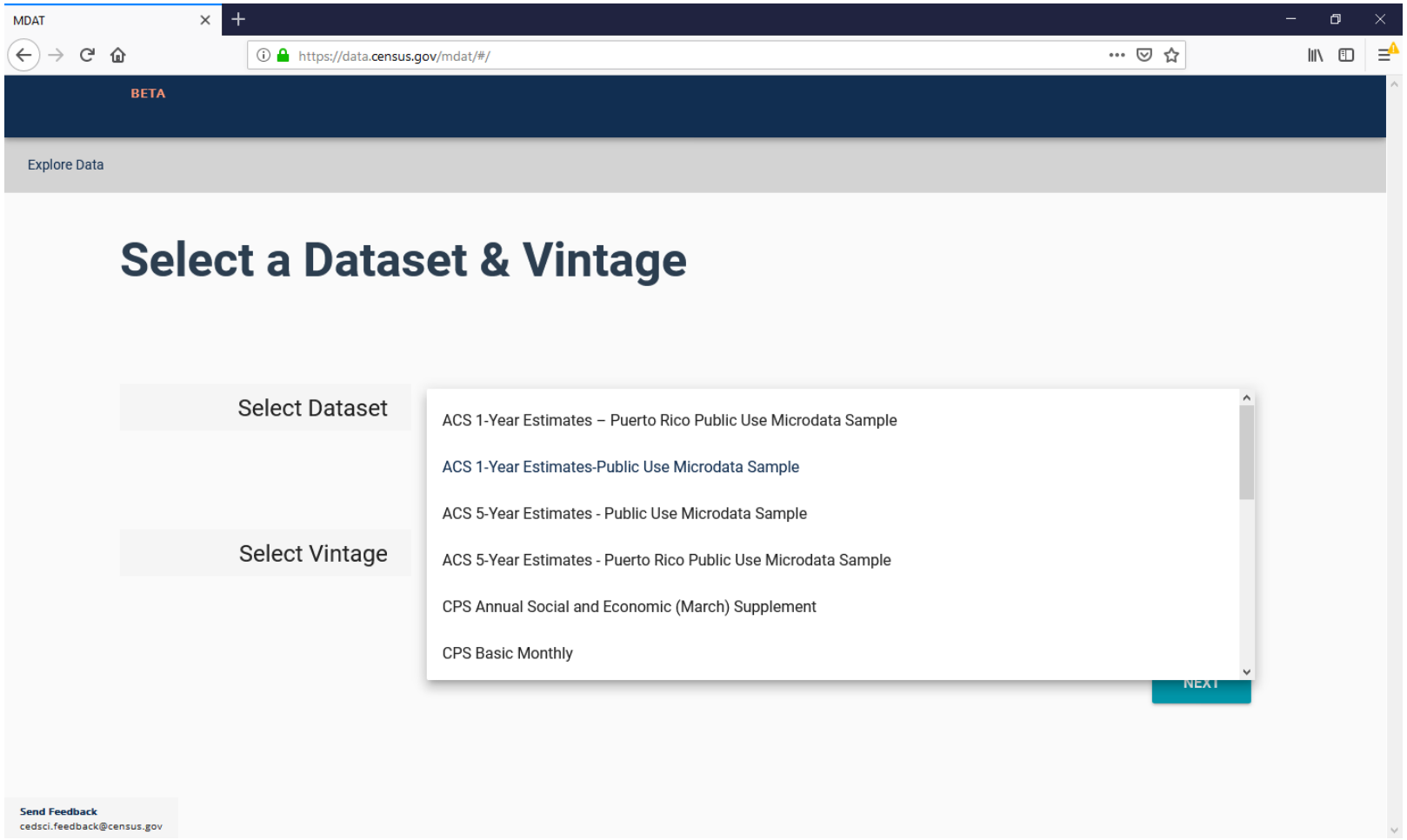
# 1. Select Dataset




Click drop-down arrow

Return to Table of Contents

# 1. Select Dataset



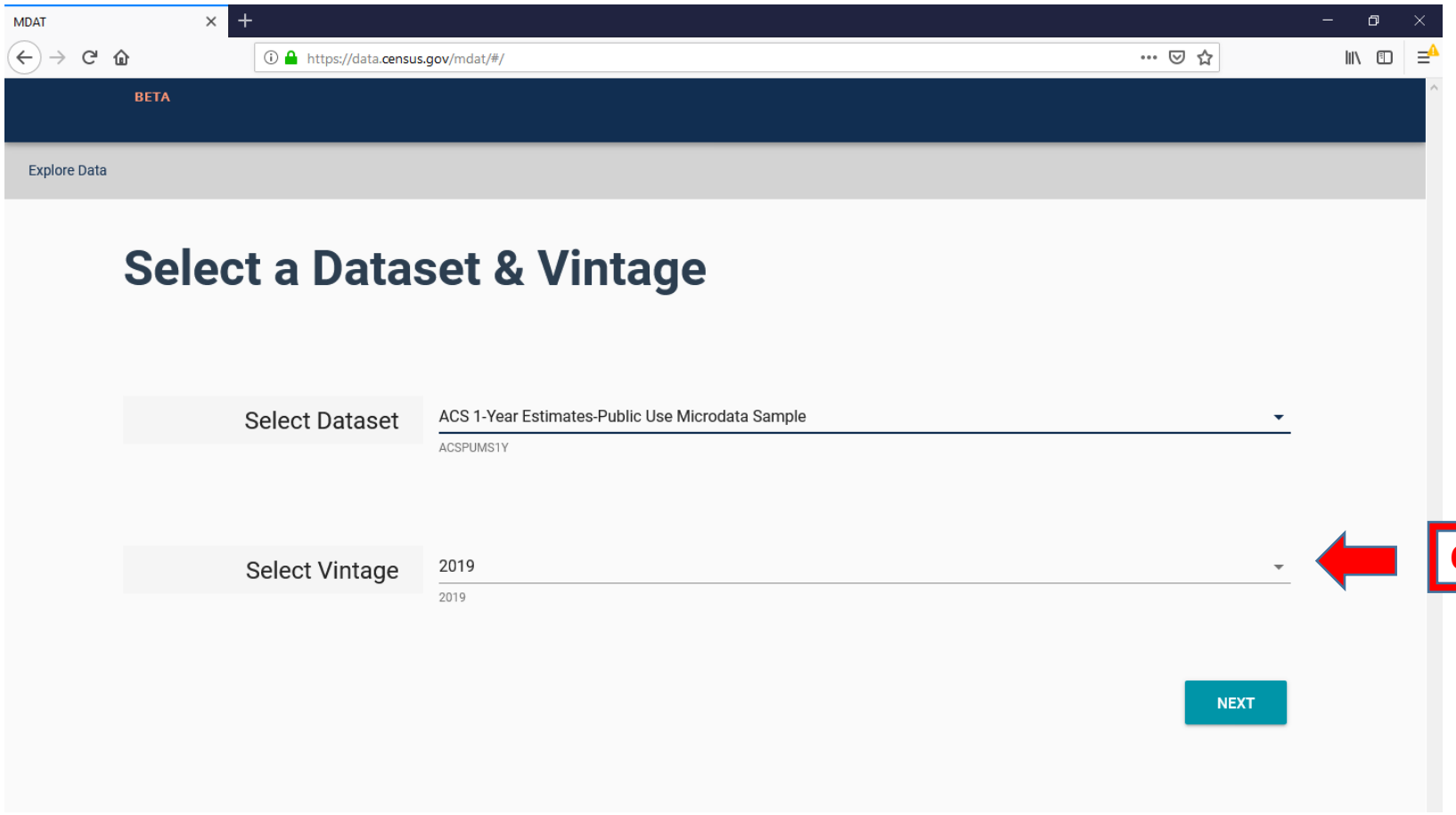

For this walkthrough, we will use the following dataset: ACS 1-Year Estimates – Public Use Microdata Sample. This dataset paired with the most recent year available provides the most up-to-date ACS estimates.

Alternatively, the ACS 5-Year Estimates Public Use Microdata Sample is used when interested in producing the most reliable estimates at lower levels of geography (e.g., county-level or smaller).

To select a dataset use the drop-down arrow.

Return to Table of Contents

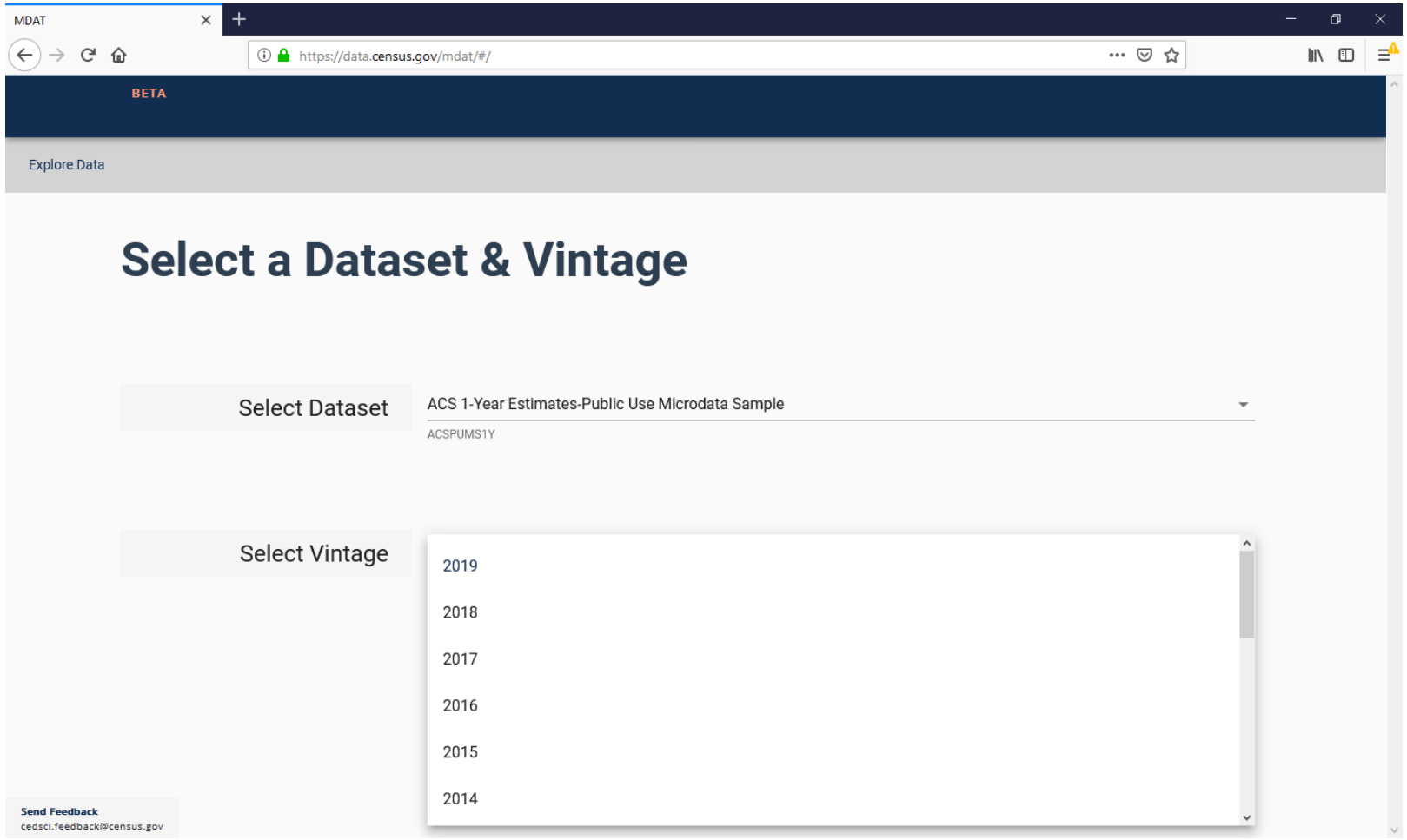
# 2. Select Vintage




Click drop-down arrow

Return to Table of Contents

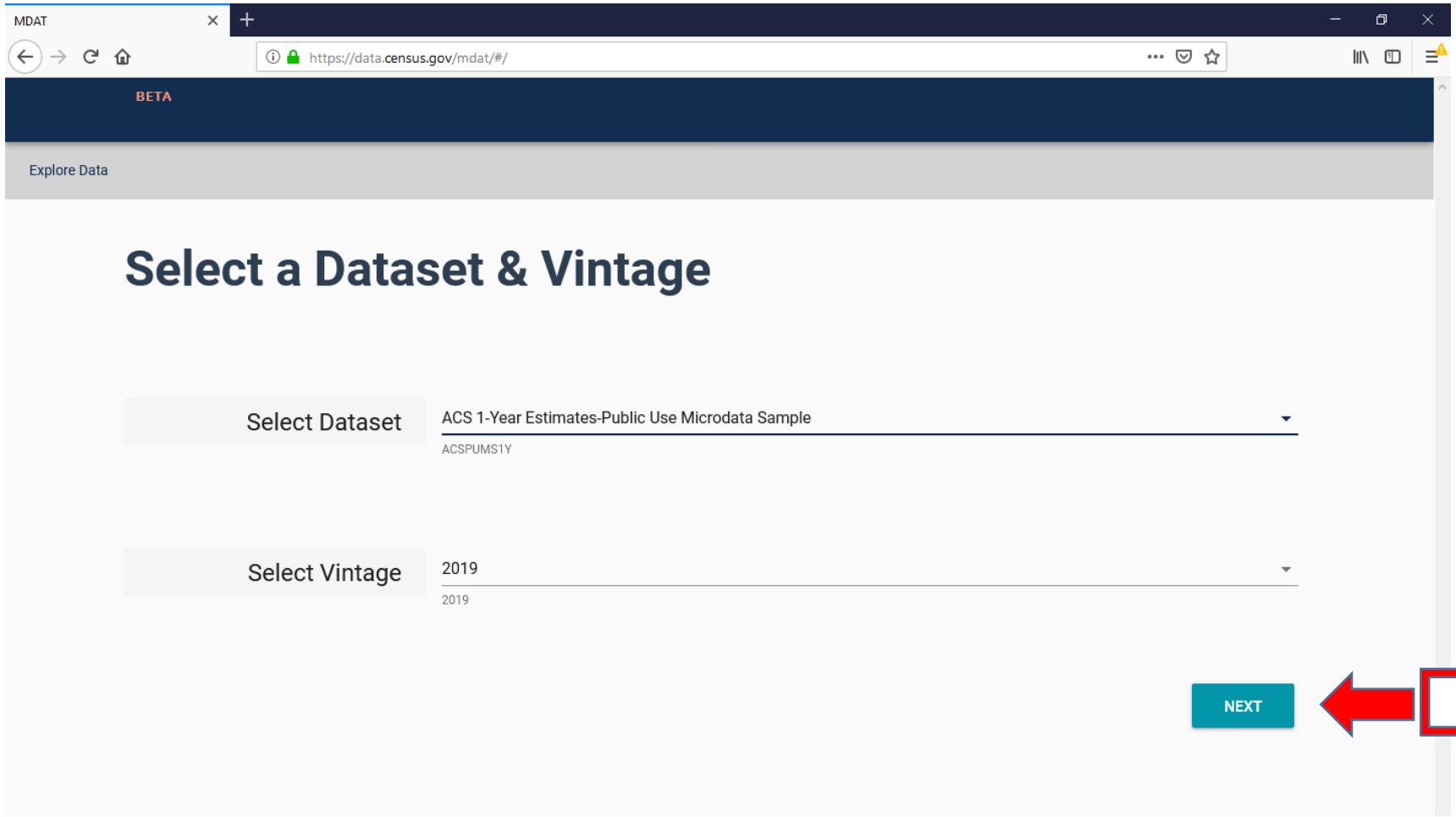
# 2. Select Vintage




For this walkthrough, we will use the 2019 vintage. In this case, the most recent vintage paired with the ACS 1-Year Estimates-Public Use Microdata Sample provides the most up-to-date ACS estimates.

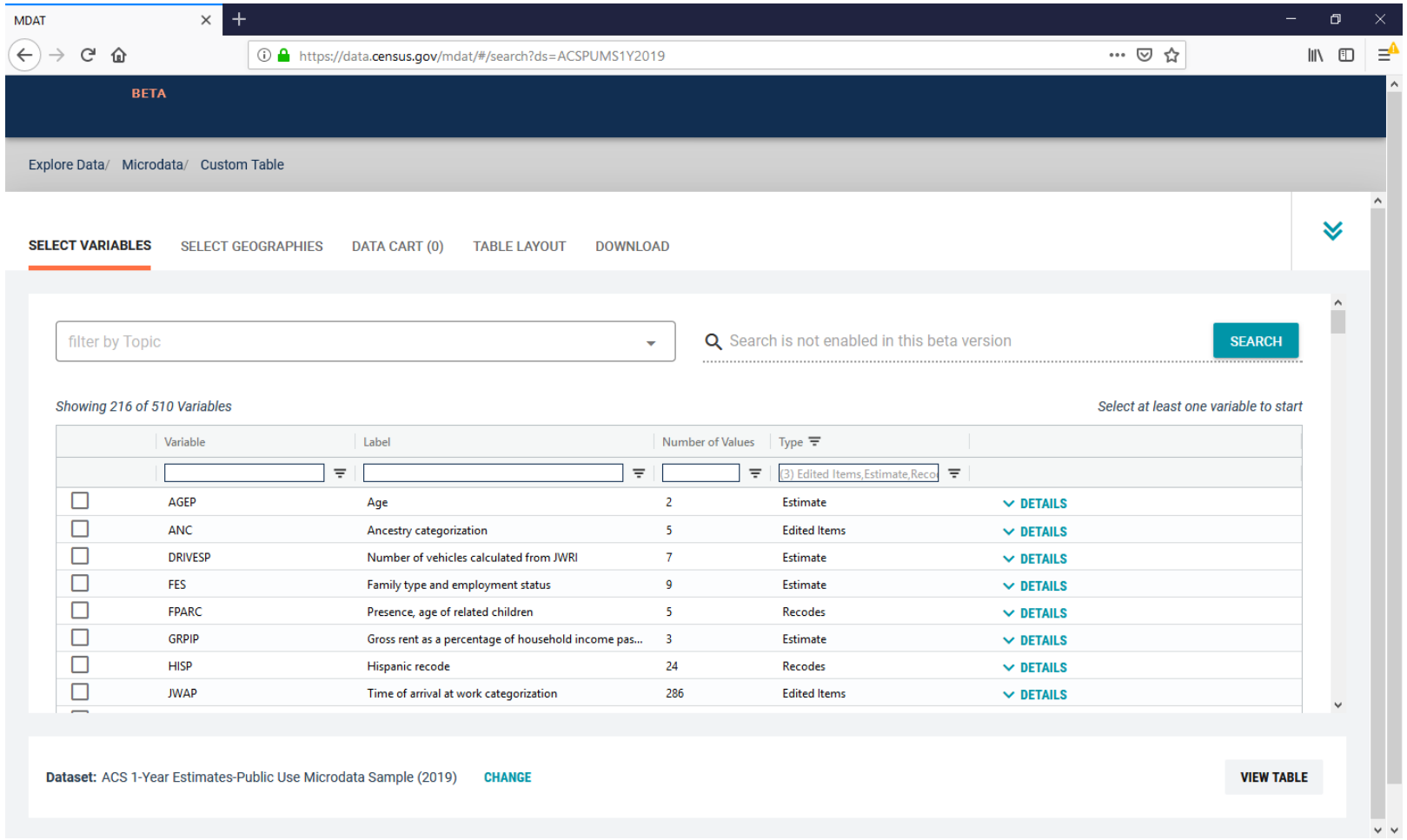
Return to Table of Contents

# 2. Select Vintage




Return to Table of Contents

# 3. Select Variables




For this walkthrough, we will begin by selecting the occupation variable.

Data dictionaries provide additional information on available variables and how each variable is coded.

ACS PUMS data dictionaries can be found on the following page:

https://www.census.gov/programs-surveys/acs/technical-documentation/pums/documentation.html

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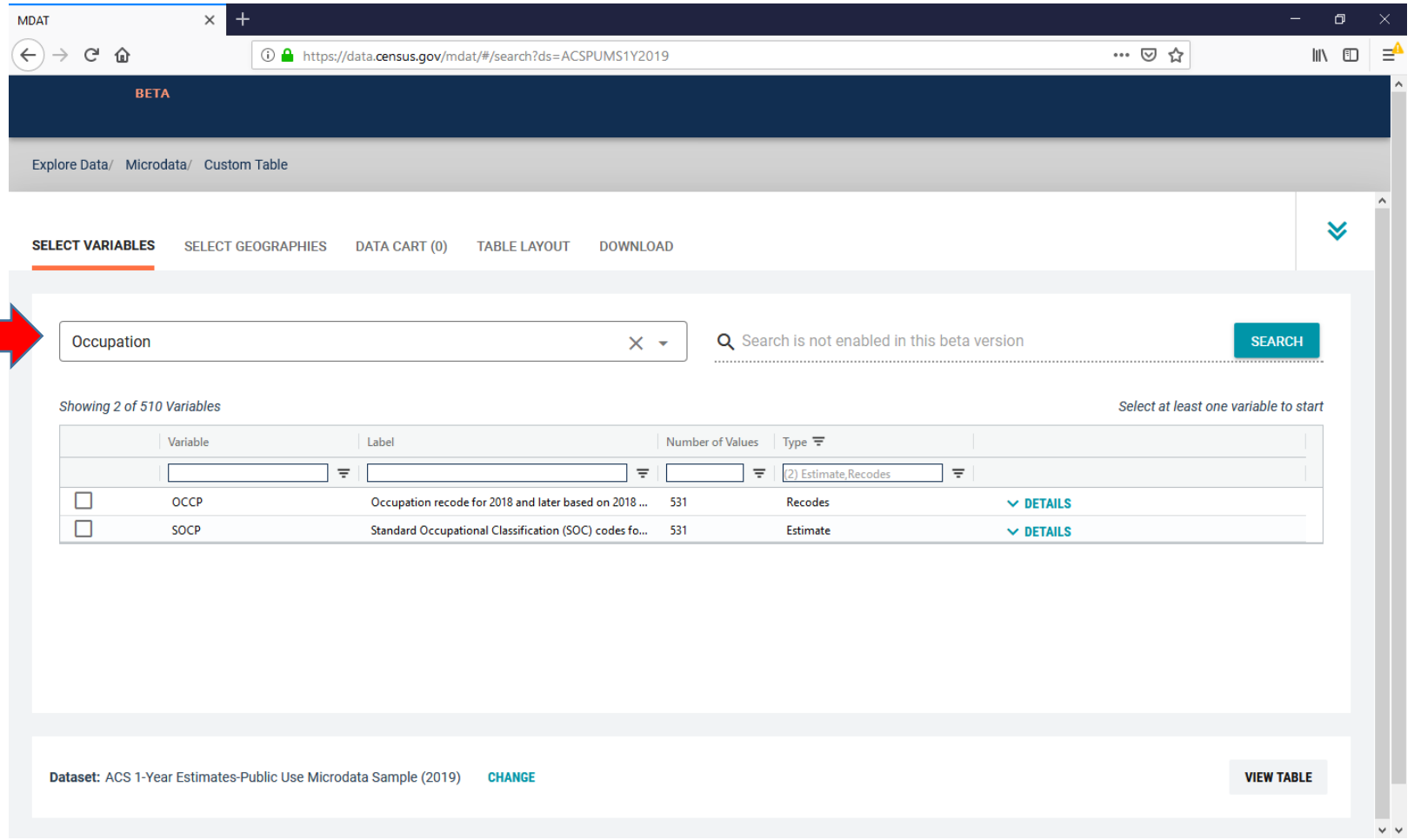
Return to Table of Contents

# 3. Select Variables

**Select Occupation**




In the "Filter by Topic" box, scroll down to select "Occupation" from the list of variables. The 510 possible variables will then be filtered to only two variables.

When doing analysis that includes occupation variables, we rely on the "OCCP" variable.

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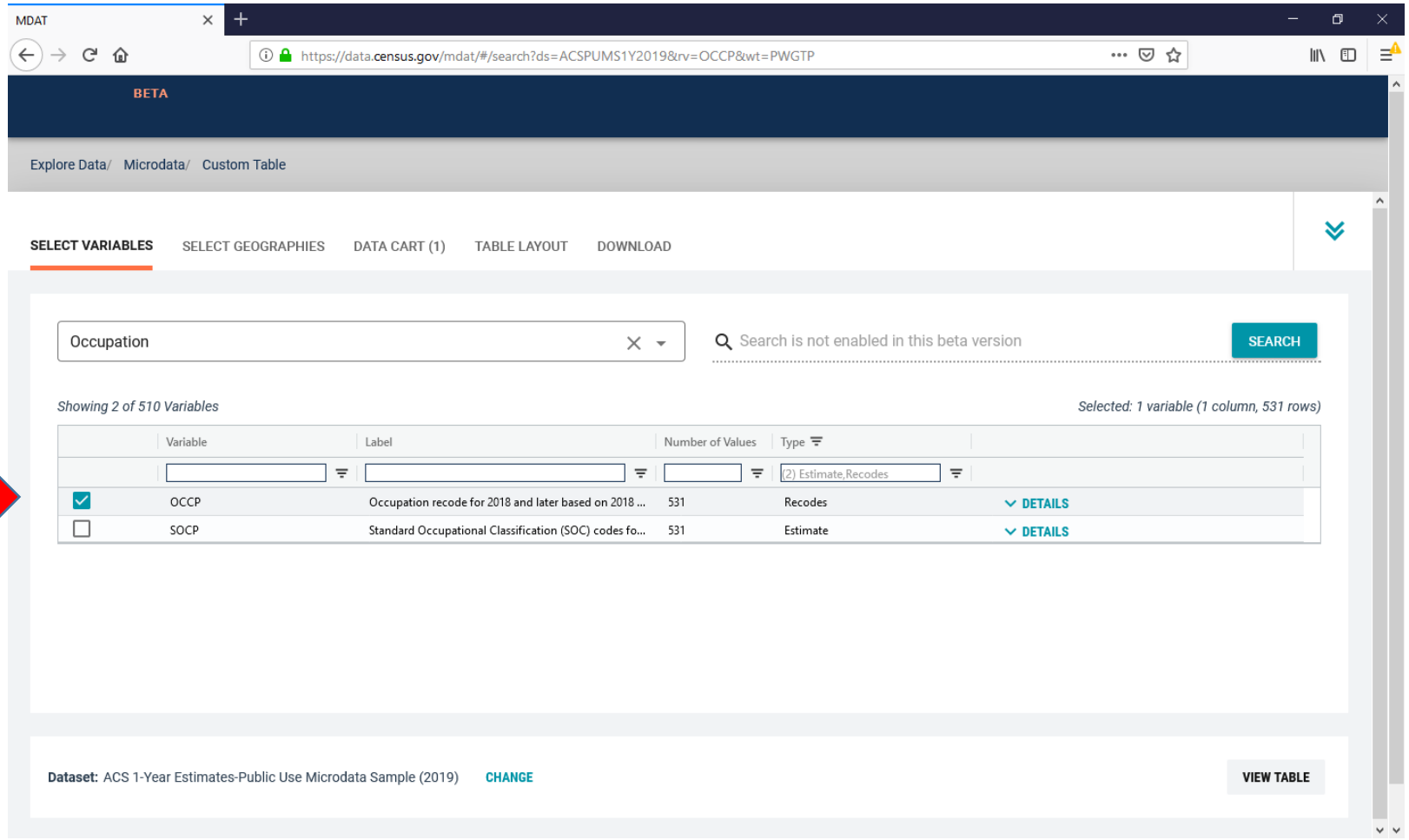
Return to Table of Contents

# 3. Select Variables

Select the checkbox next to the "OCCP" Variable.

Click checkbox

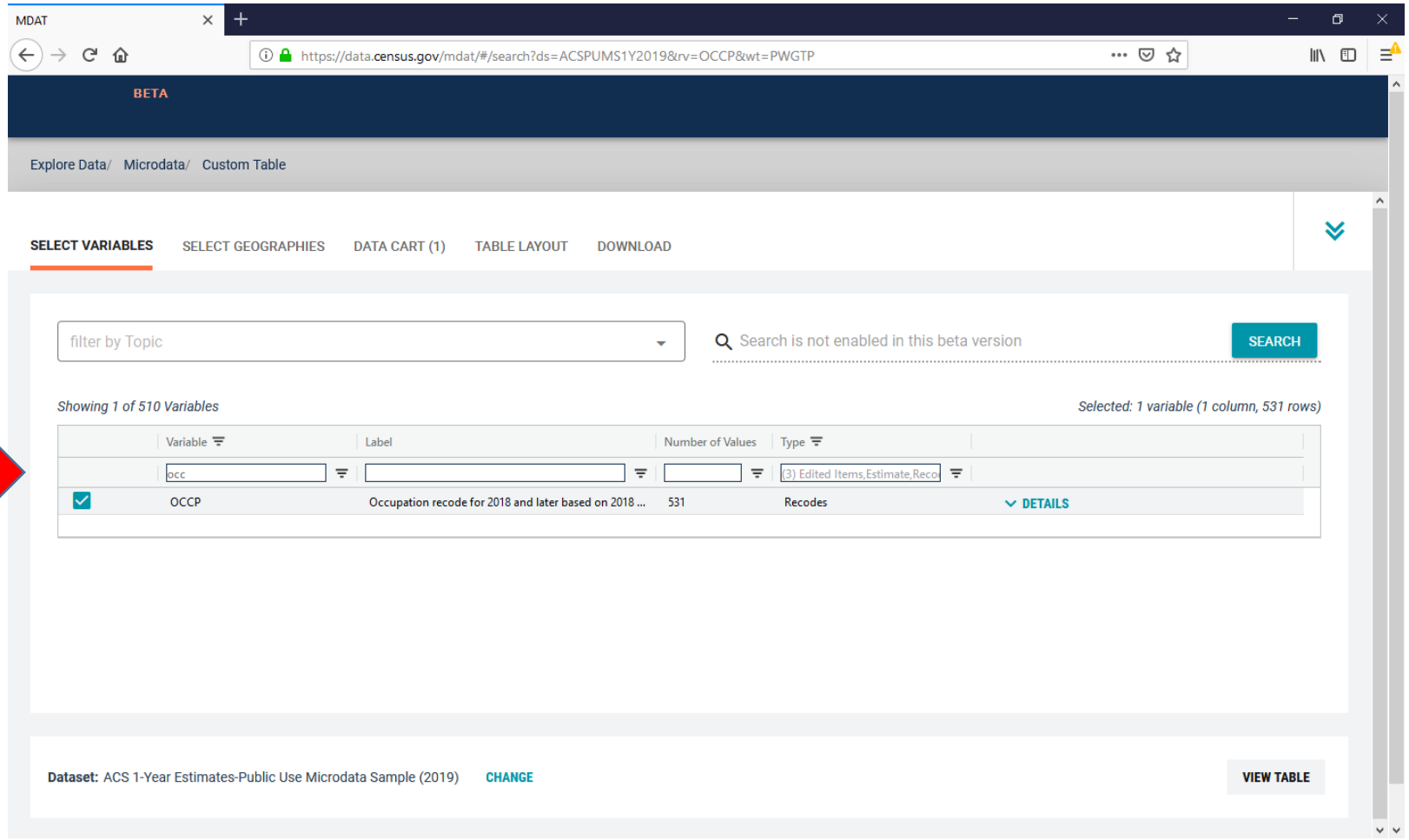



Return to Table of Contents

# 3. Select Variables

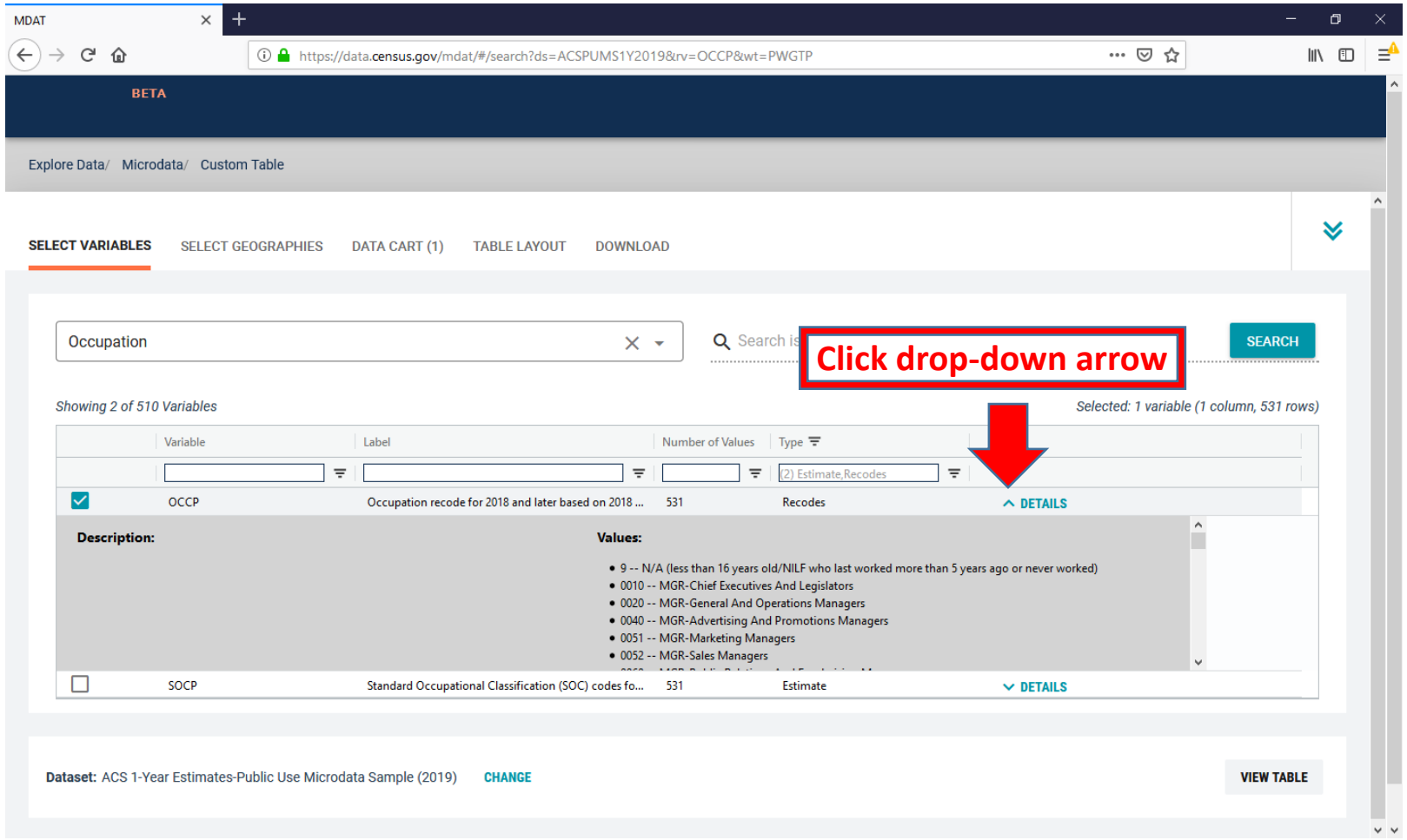
An alternative way to filter, to find and to select the “OCCP” variable is to type in “OCC” in the search box under the variable column as shown in this example.

Type here




Return to Table of Contents

# 3. Select Variables




For the OCCP variable, click on DETAILS or the arrow to display all the values within the OCCP variable.

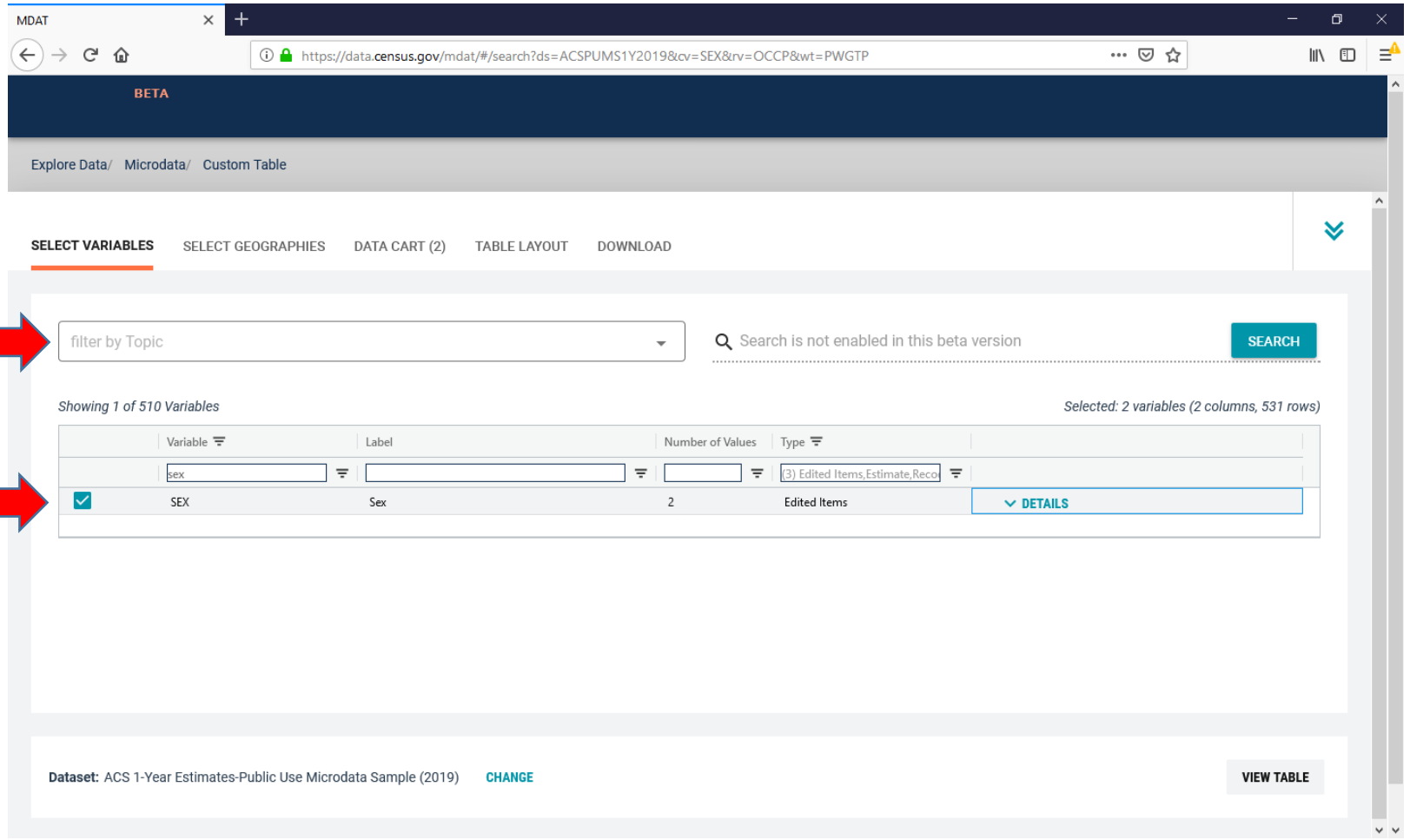
Return to Table of Contents

# 3. Select Variables

In addition to selecting the "OCCP" variable, filter, find, and select the "SEX" variable before clicking on "View Table".

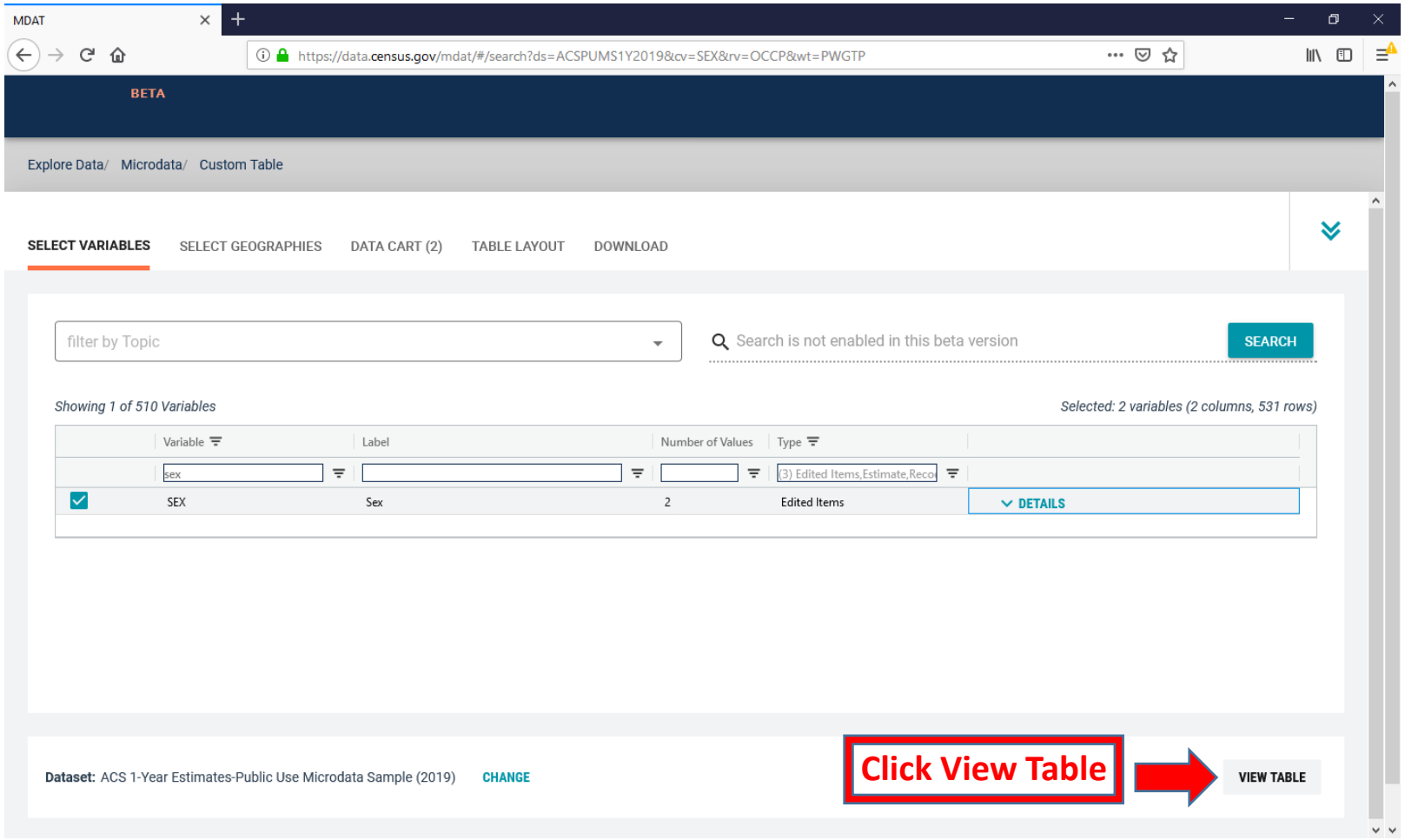
**1. Select "Age and Sex".**

**2. Click checkbox**




Return to Table of Contents

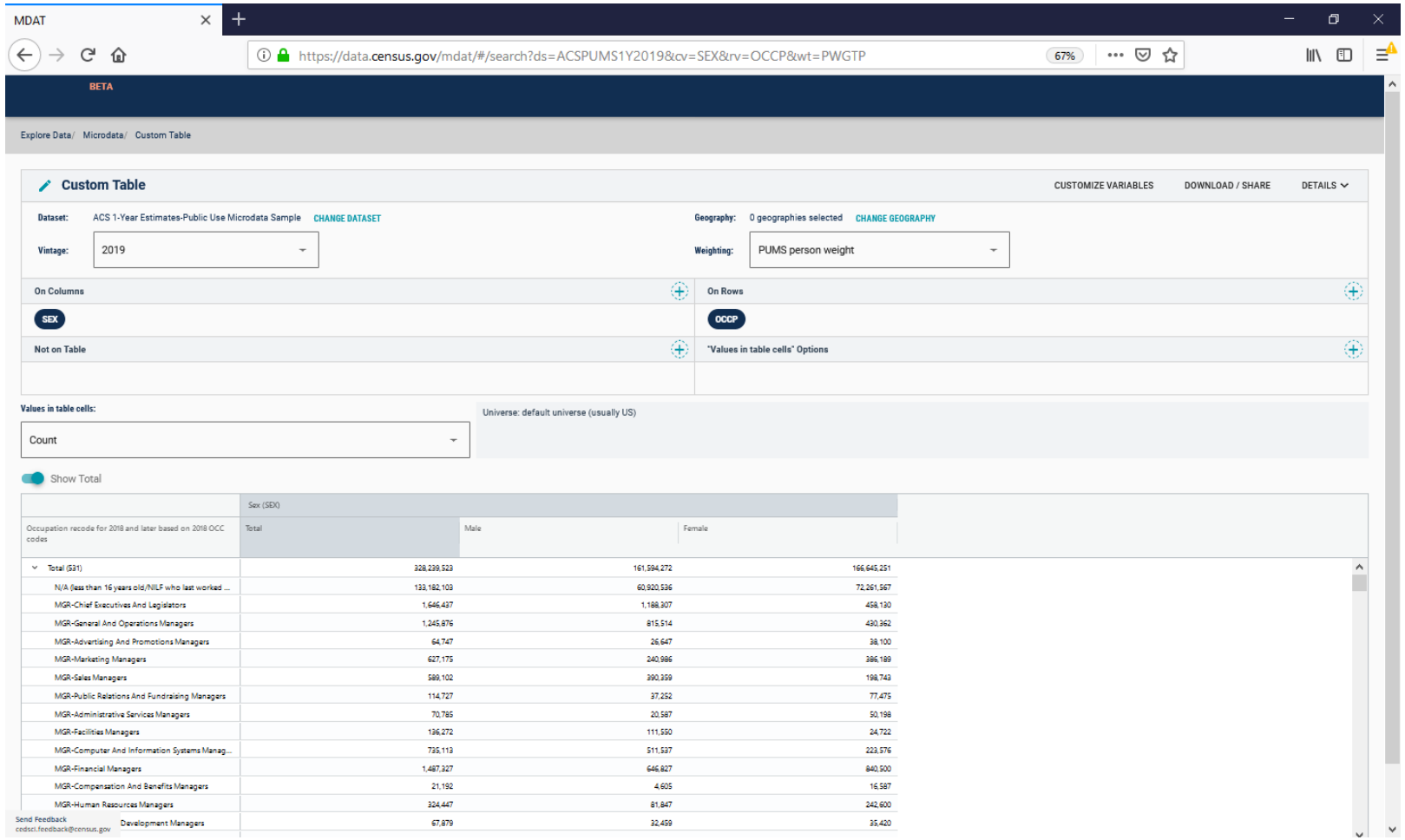
# 3. Select Variables




Click “View Table”.

Return to Table of Contents

# 4. Constructed Table




This table shows the estimates for "OCCP" by "SEX" variables or Occupation by Sex.

On the right, there is a weighting category. You should use the PUMS person weight (instead of the housing weight) when working with the OCCP variable.

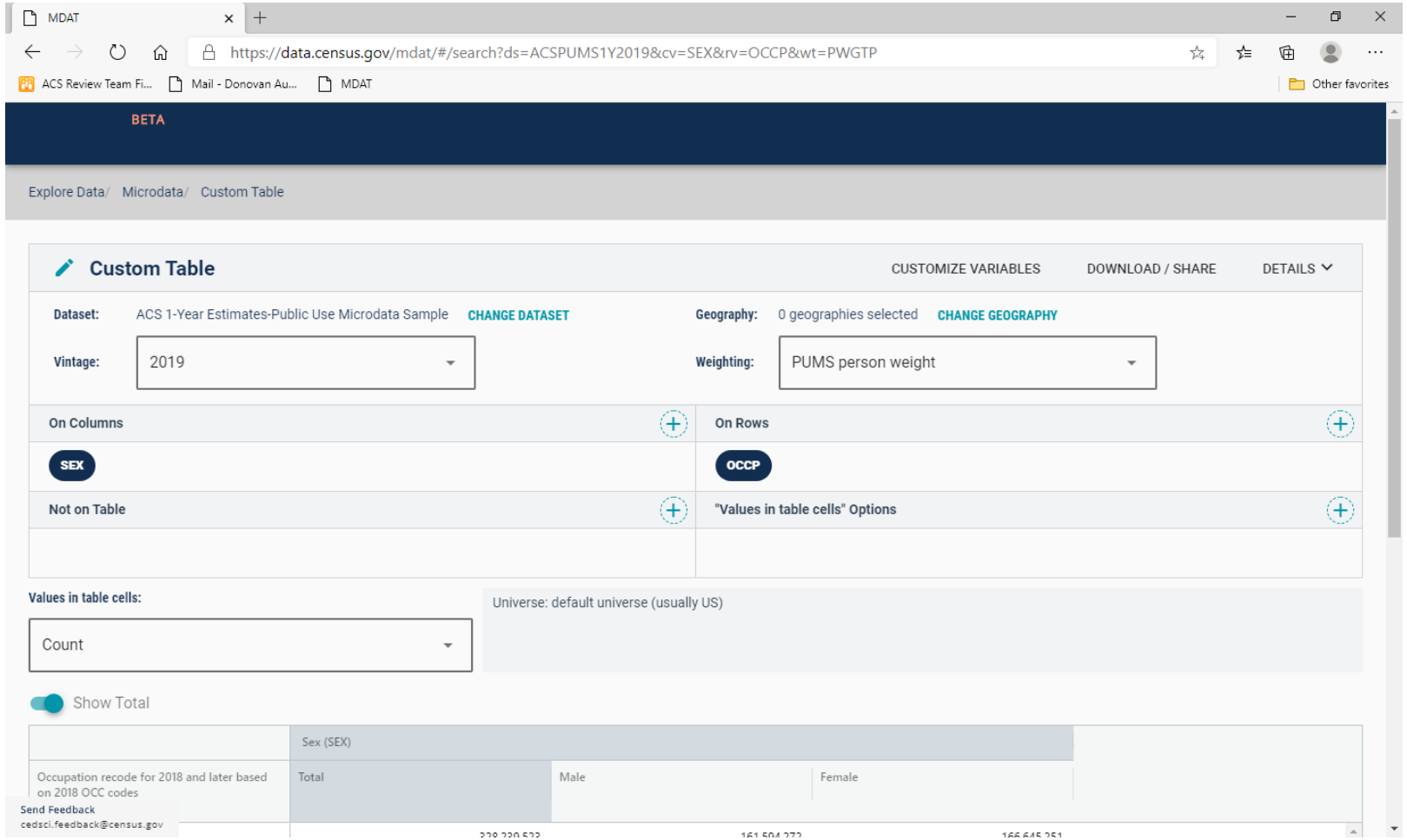
For the category value in table cells, the "Count" option is selected by default.

You will also notice the "SEX" variable is in the "On Columns" section of the page while the "OCCP" variable is in the "On Rows" section of the page.

United States® Census Bureau

Return to Table of Contents

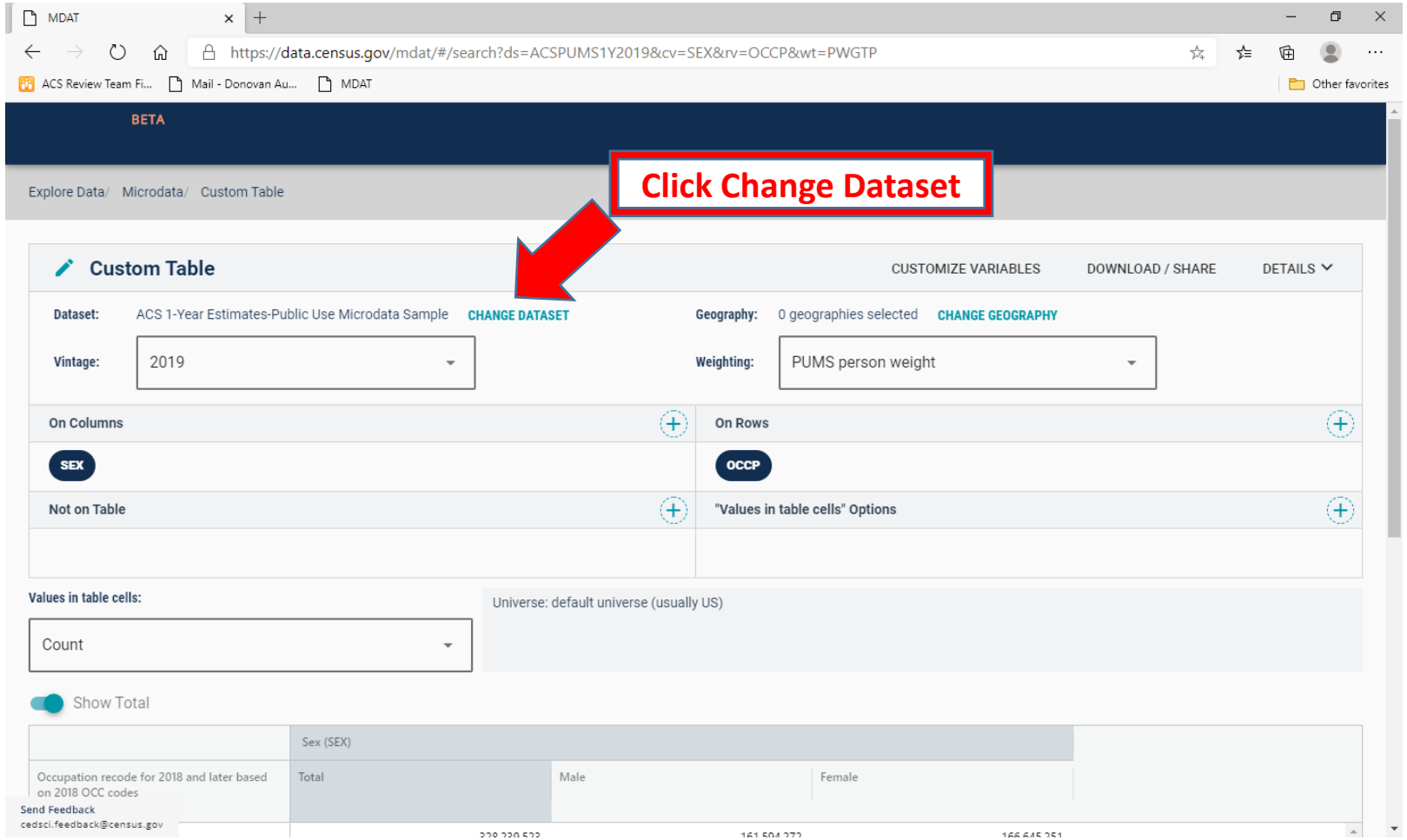
# 4. Constructed Table




Let focus in on the "Custom Table" section of the previous slide which is located directly above the table.

Return to Table of Contents

# 5. Table – Change Dataset



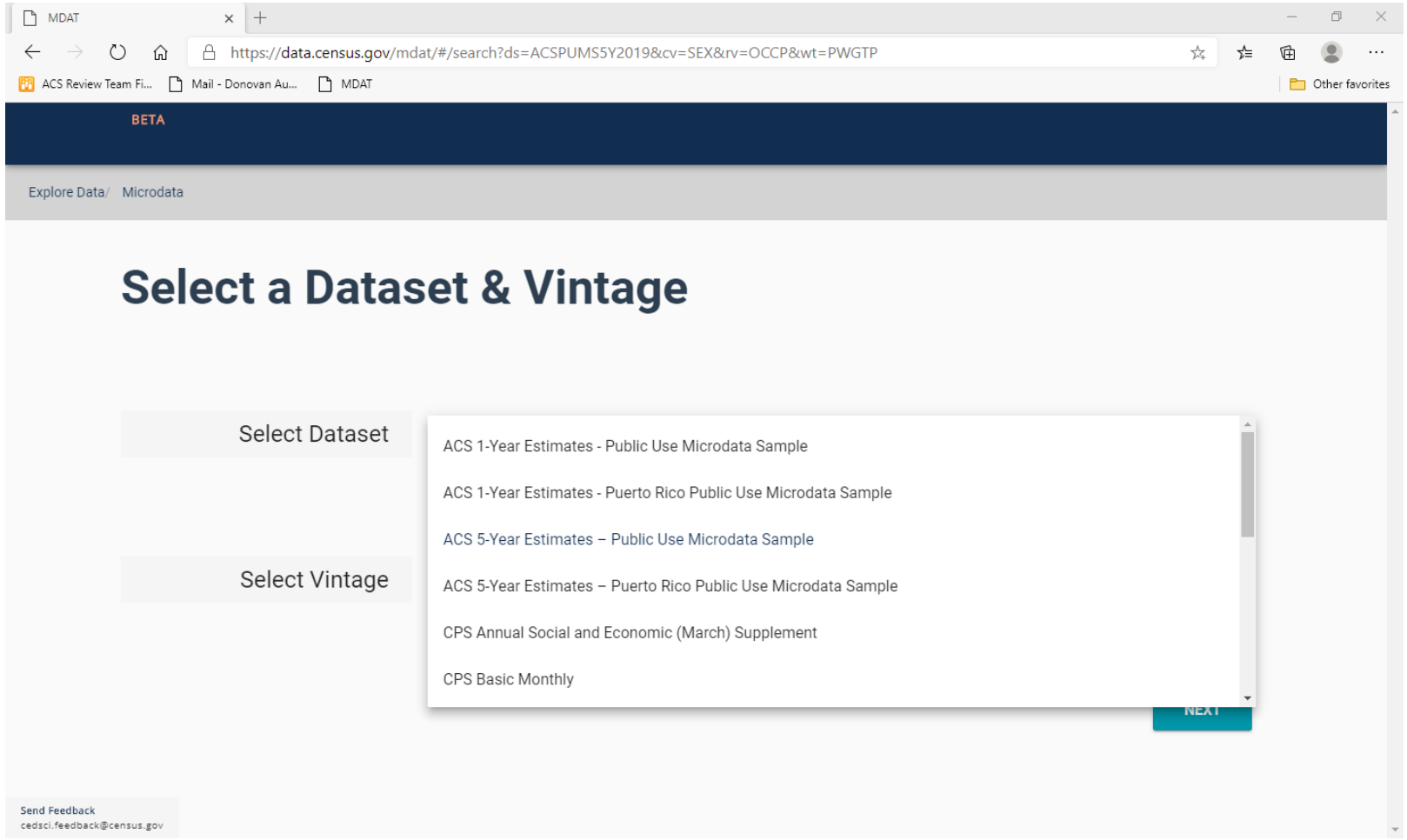

This table shows the estimates for “OCCP” by “SEX” variables or Occupation by Sex.

Note on the top left, the dataset is listed as ACS 1-Year Estimates-Public Use Microdata Sample and the vintage is 2019. There are options next to both categories to make an additional change if required.

We will change the dataset year of our existing table while keeping the same table.

Return to Table of Contents

# 5. Table – Change Dataset



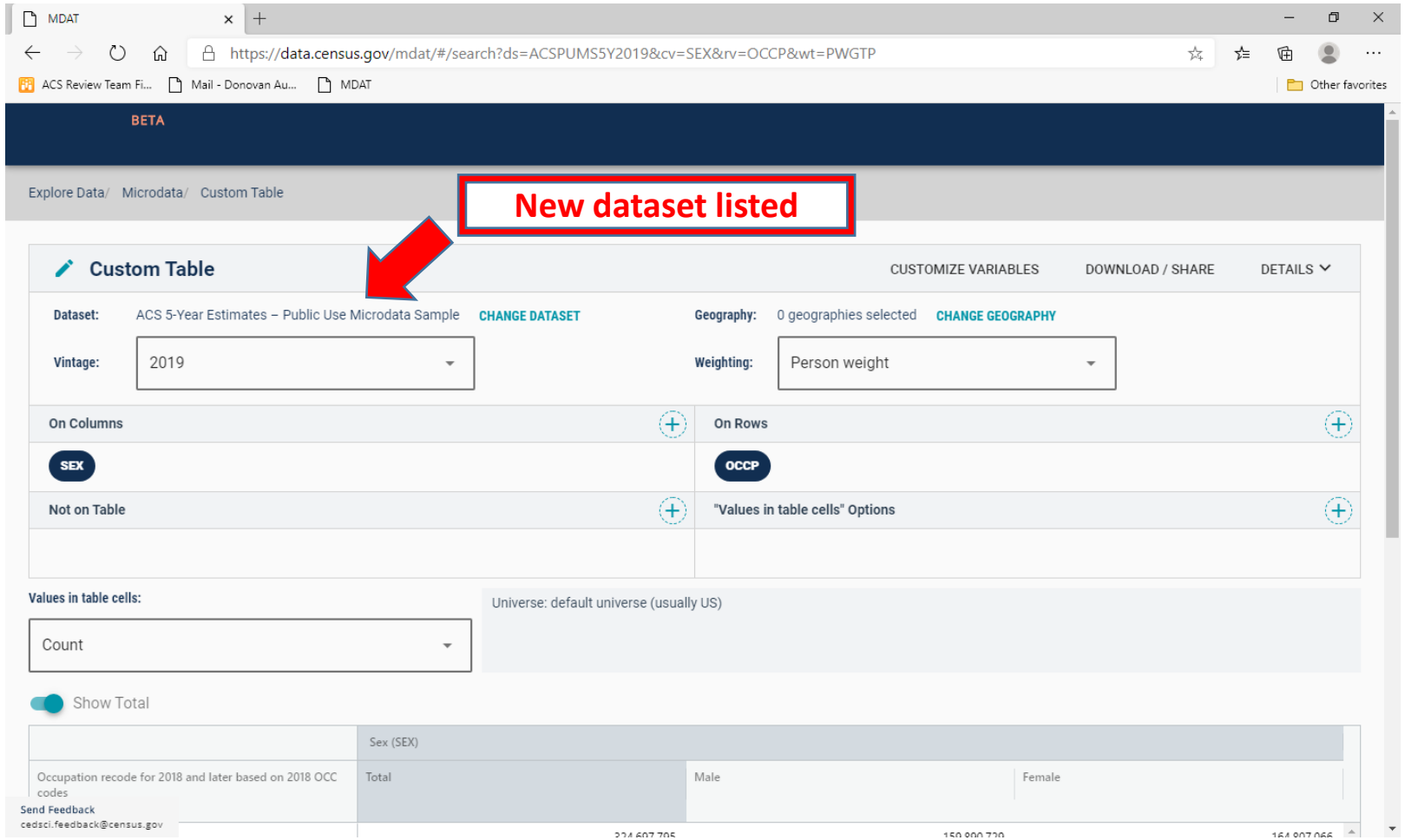

This tables show the estimates for “OCCP” by “SEX” variables or Occupation by Sex.

After you click “Change Dataset”, you will be able to change your dataset if necessary. Click ACS 5-Year Estimates – Public Use Microdata Sample.

Click “NEXT” when you are done.

Return to Table of Contents

# 5. Table – Change Dataset




This table shows the estimates for "OCCP" by "SEX" variables or Occupation by Sex.

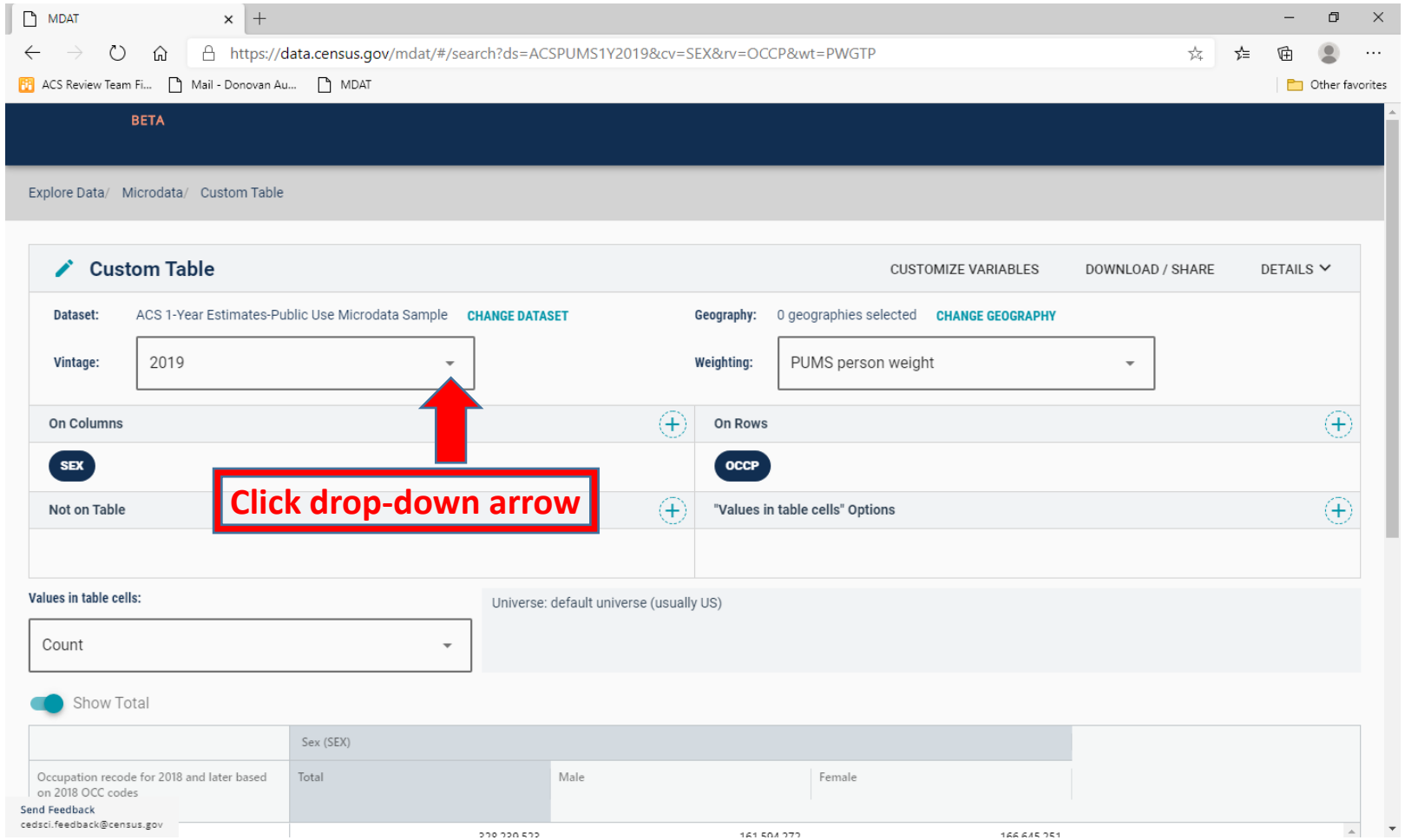
After clicking "NEXT", you will be returned to the table screen. You should see your new dataset appear.

Go ahead and return the dataset back to the ACS 1-Year Estimates – Public Use Microdata Sample.

NOTE: Return dataset to 1-year estimates before moving on to the next section.

Return to Table of Contents

# 6. Table – Change Vintage




This table shows the estimates for "OCCP" by "SEX" variables or Occupation by Sex.

Although the vintage is currently listed as 2019, you can change the vintage by clicking on the drop-down arrow next to the listed vintage year.

NOTE: this only works if the code lists between the vintage years remain the same. In this case, changing from 2019 to 2018 is ok, but going to 2017 will not populate correctly.

Please see note on next slide for making vintage changes.

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Return to Table of Contents

# Making Vintage Changes

Occupation PUMS code list:

Census 2018 OCC: 2018-2019 vintages
Census 2012 OCC: 2013-2017 vintages
Census 2010 OCC: 2010-2012 vintages
Census 2002 OCC: 2005-2009 vintages

Industry PUMS code list:

Census 2017 IND: 2018-2019 vintages
Census 2012 IND: 2013-2017 vintages
Census 2007 IND: 2008-2012 vintages
Census 2002 IND: 2005-2007 vintages

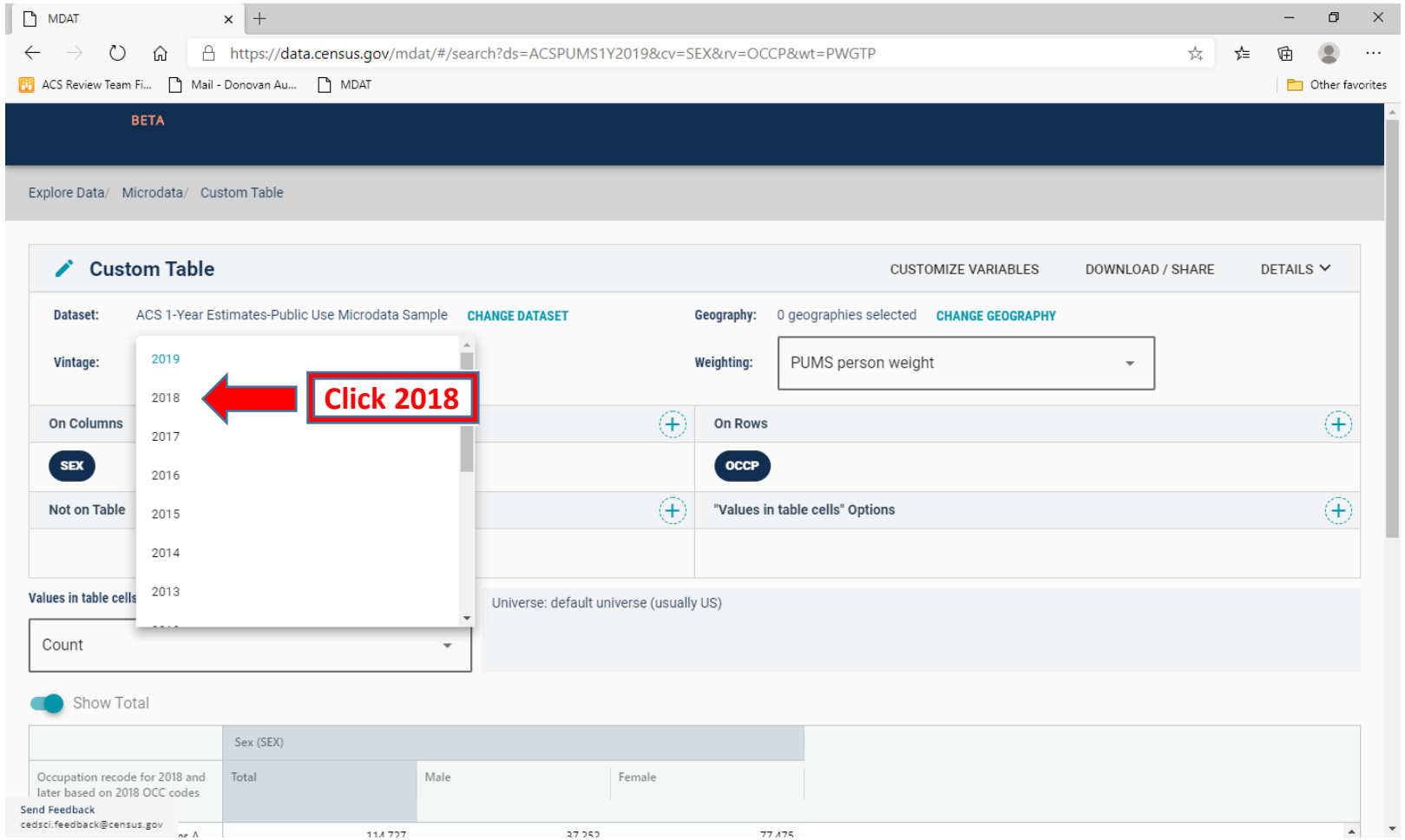
NOTE: Since the variable names remain the same across vintages, it is not always clear whether vintages are comparable between years.

This quick guide shows what vintage is appropriate to what given year.

United States® Census Bureau

Return to Table of Contents

# 6. Table – Change Vintage

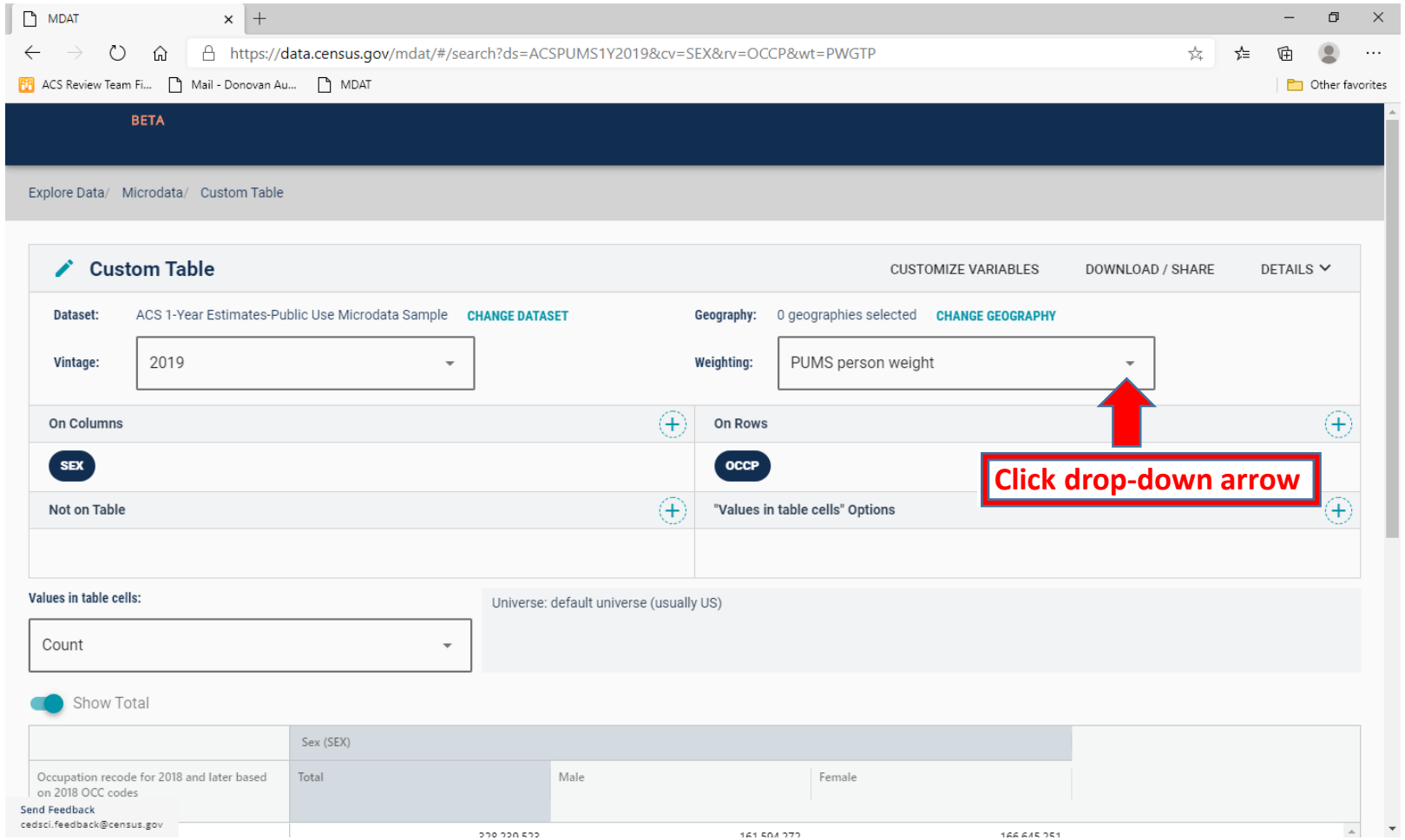



This table shows the estimates for “OCCP” by “SEX” variables or Occupation by Sex.

Click the 2018 vintage and observe the changes made to your estimates in the table below.

Return to Table of Contents

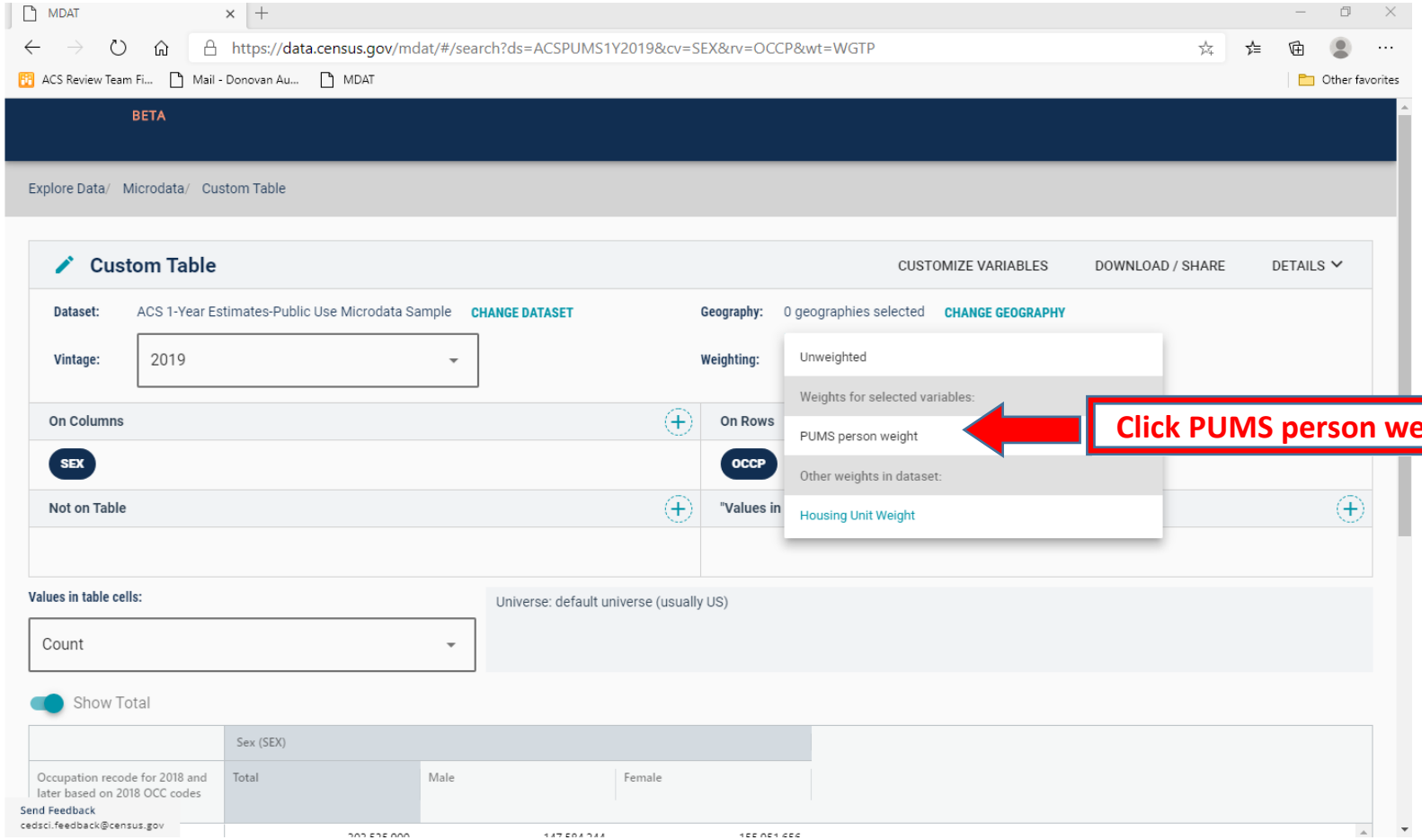
# 7. Table – Weighting




When creating tables using the OCCP variable, you should use the default “PUMS person weight”.

Return to Table of Contents

# 7. Table – Weighting




When creating tables using the OCCP variable, you should use the default "PUMS person weight".

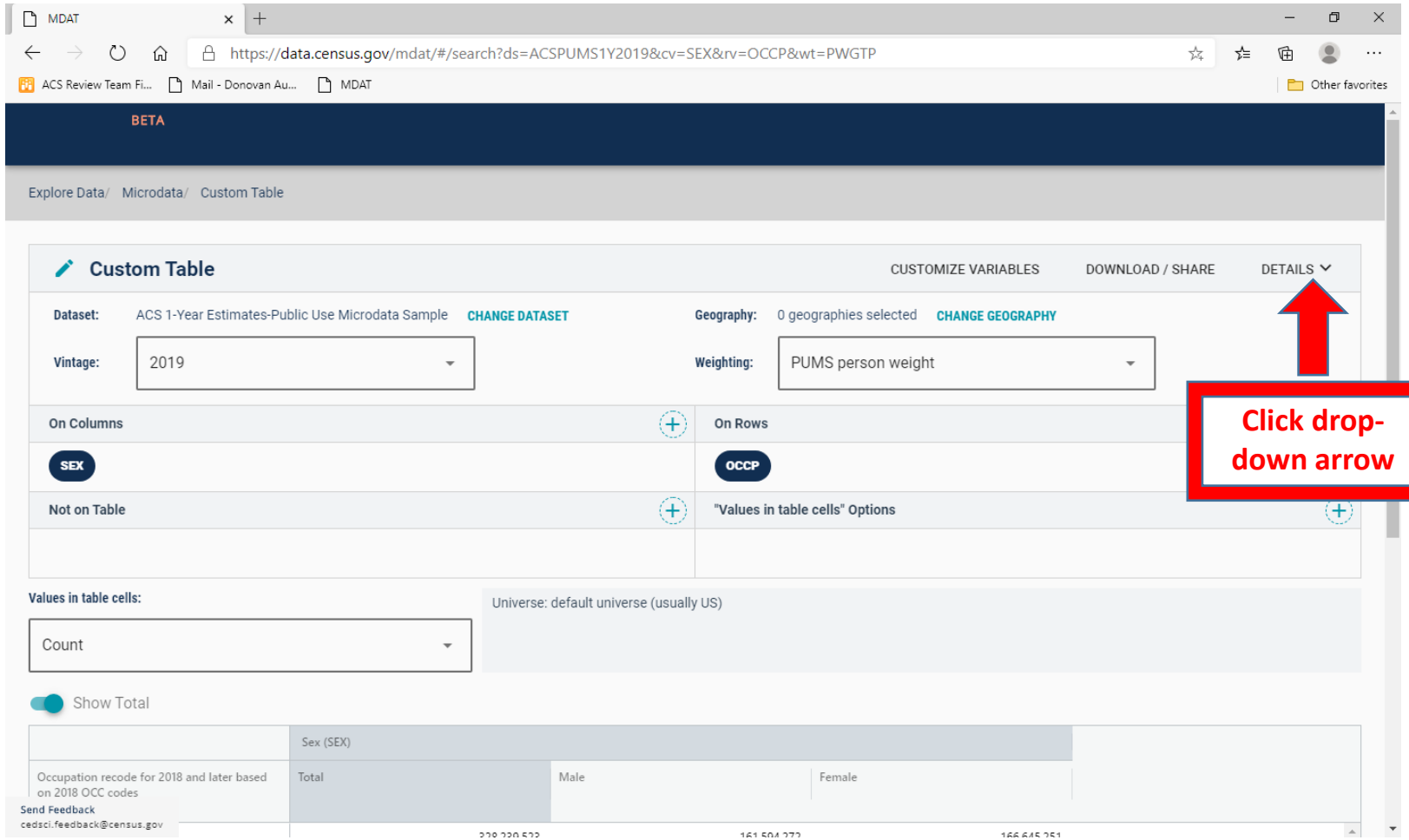
For more information on weighting, visit:

https://www.census.gov/programs-surveys/acs/technical-documentation/pums/documentation.html

United States® Census Bureau

Return to Table of Contents

# 8. Table – Details

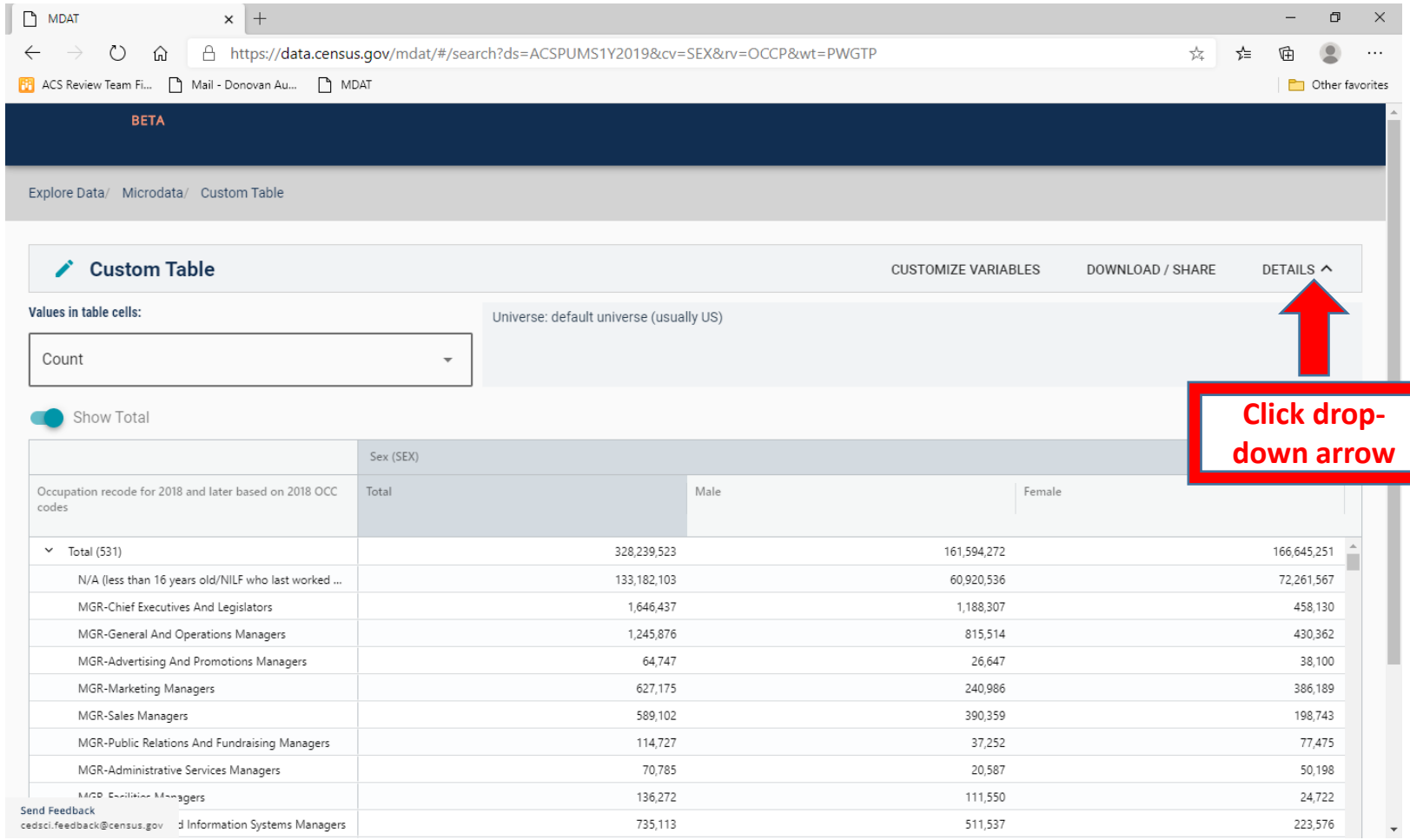



Click drop-down arrow

To hide details once you have completed the customization of your table, click on DETAILS or the arrow.

Return to Table of Contents

# 8. Table – Details

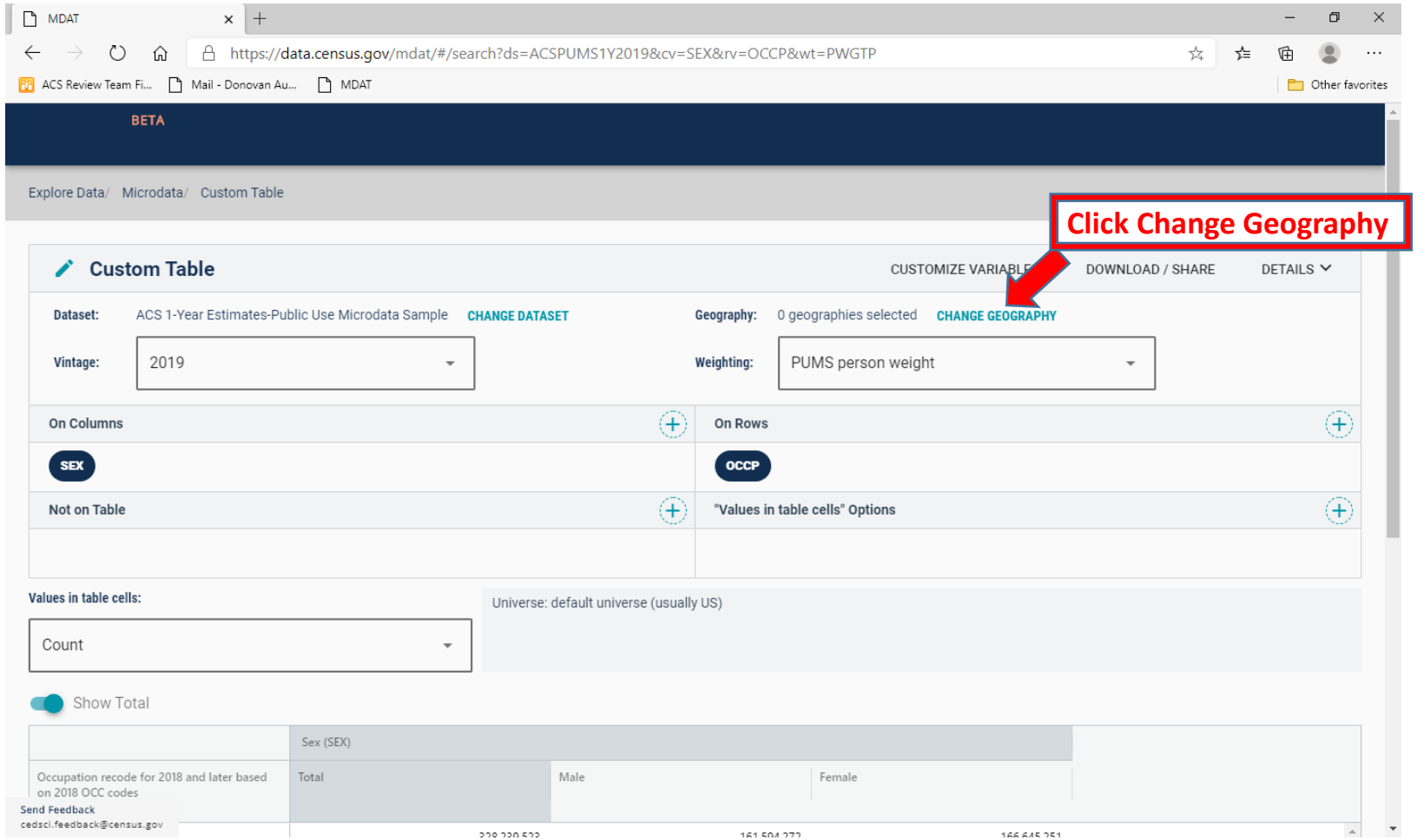



**Click drop-down arrow**

To show details once you have completed the customization of your table, click on DETAILS or the arrow

Return to Table of Contents

# 9. Select Geographies



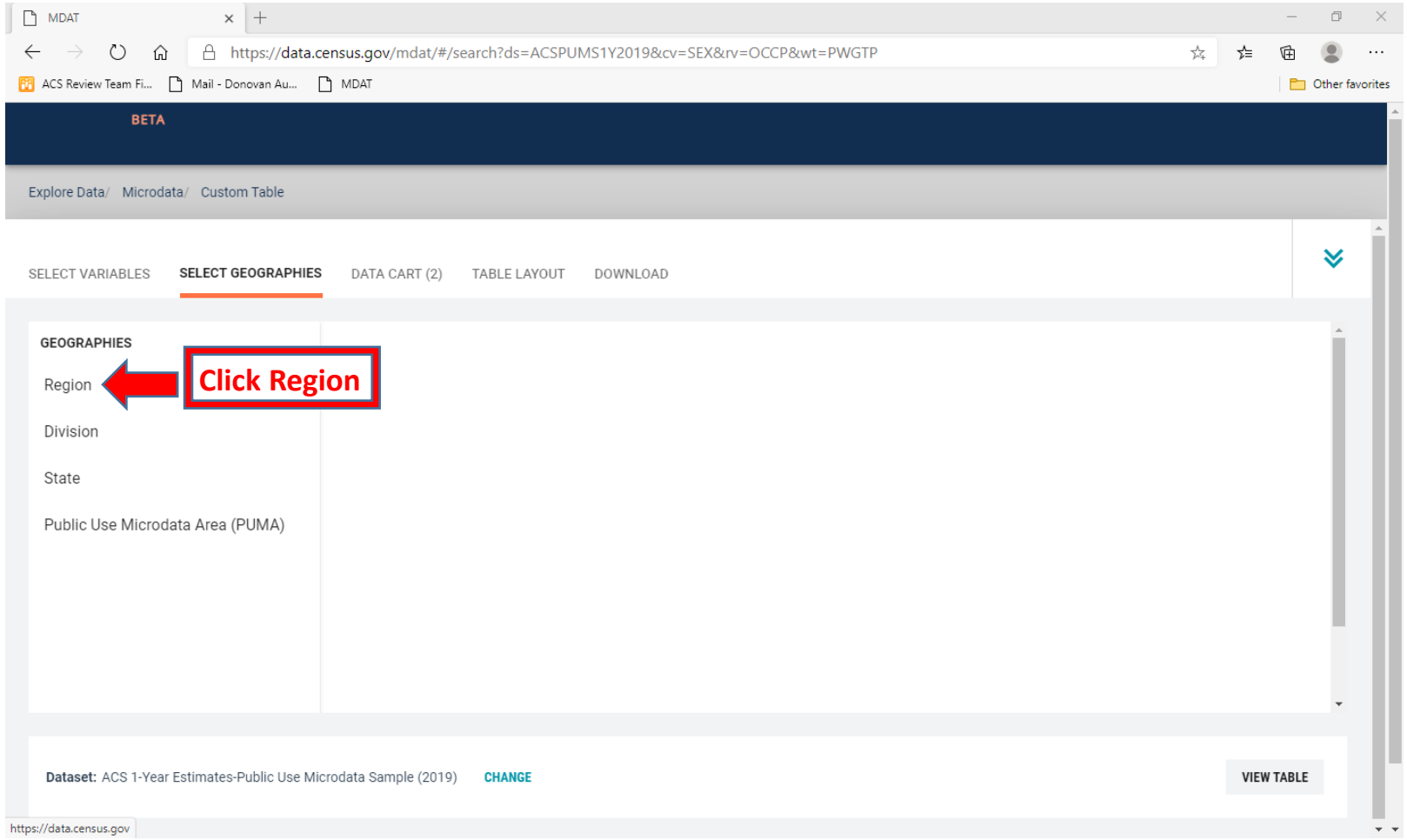

Now, let us look at how to modify the table by selecting specific geographies.

Click “Change Geography” on the right side of the custom table.

United States® Census Bureau

Return to Table of Contents

# 9. Select Geographies




After clicking “Change Geography” under custom table, you should be redirected to this page where you will see “Select Geographies” underscored.

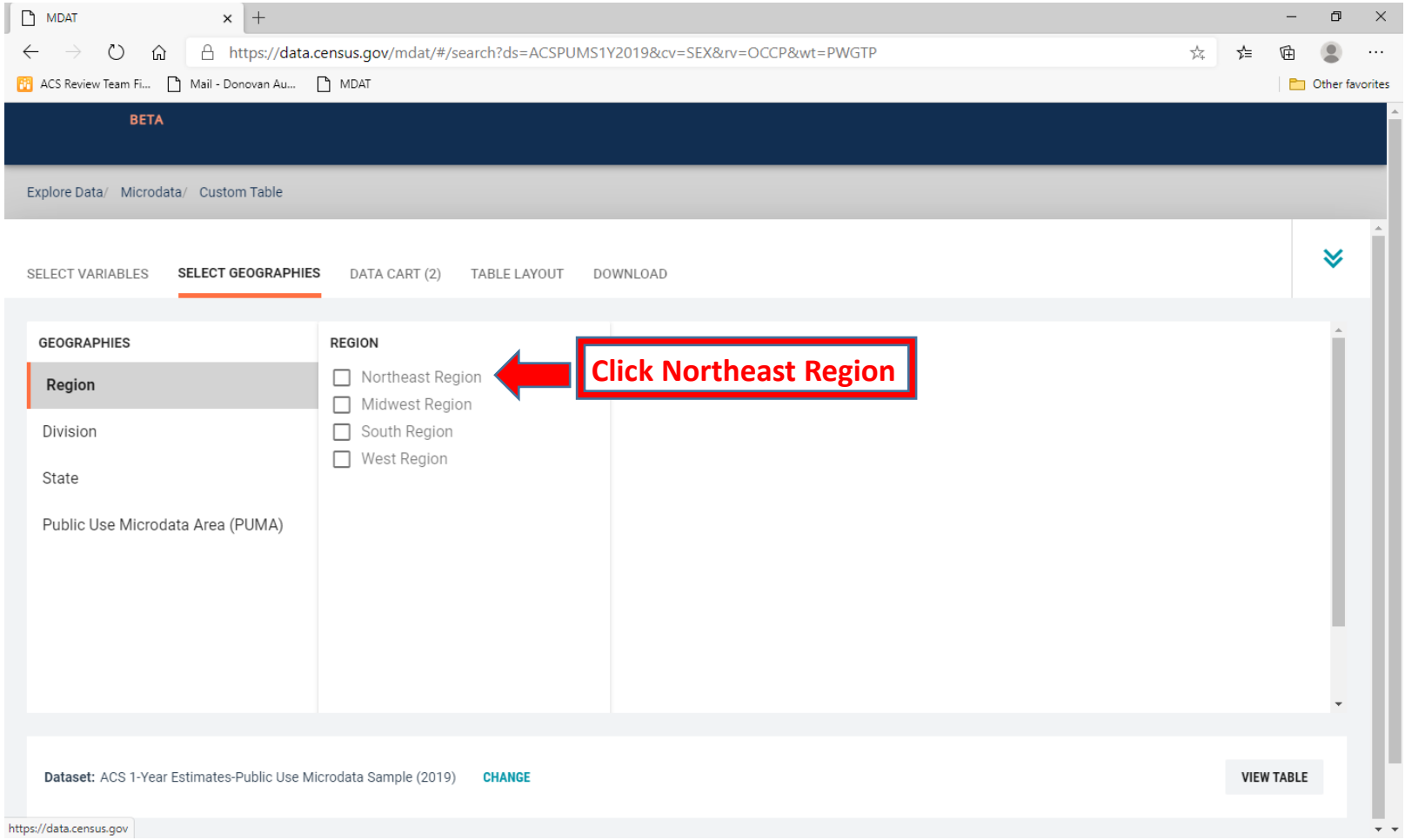
Click “Region” under GEOGRAPHIES.

Return to Table of Contents

# 9. Select Geographies

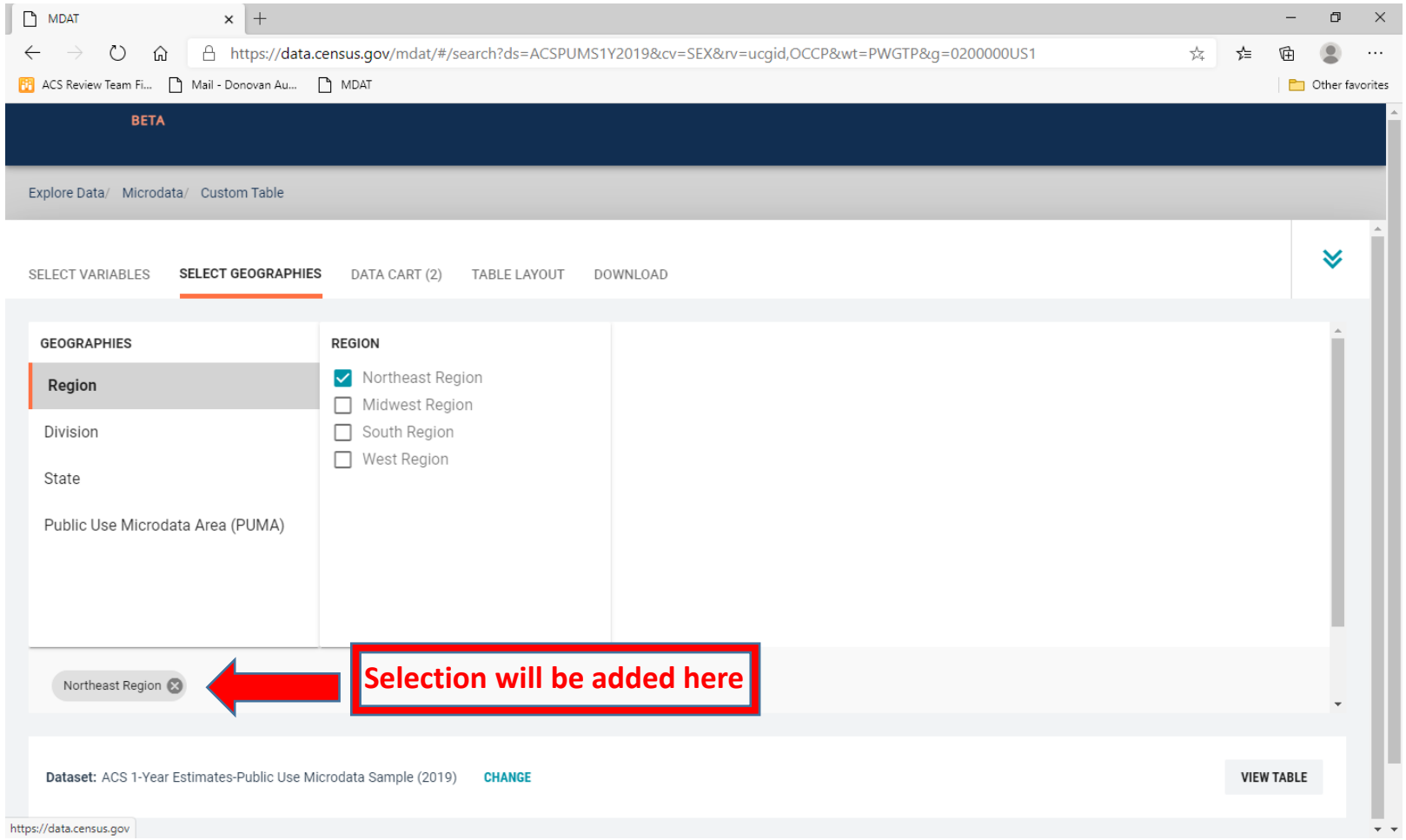
After clicking “Region” under GEOGRAPHIES, you will be provided options of regions to select.

Click “Northeast Region” under REGION.




Return to Table of Contents

# 9. Select Geographies




After clicking "Northeast Region" under REGIONS, you will see your selection appear at the bottom of the page.

Click the "VIEW TABLE" button in the bottom right-hand corner of the page.

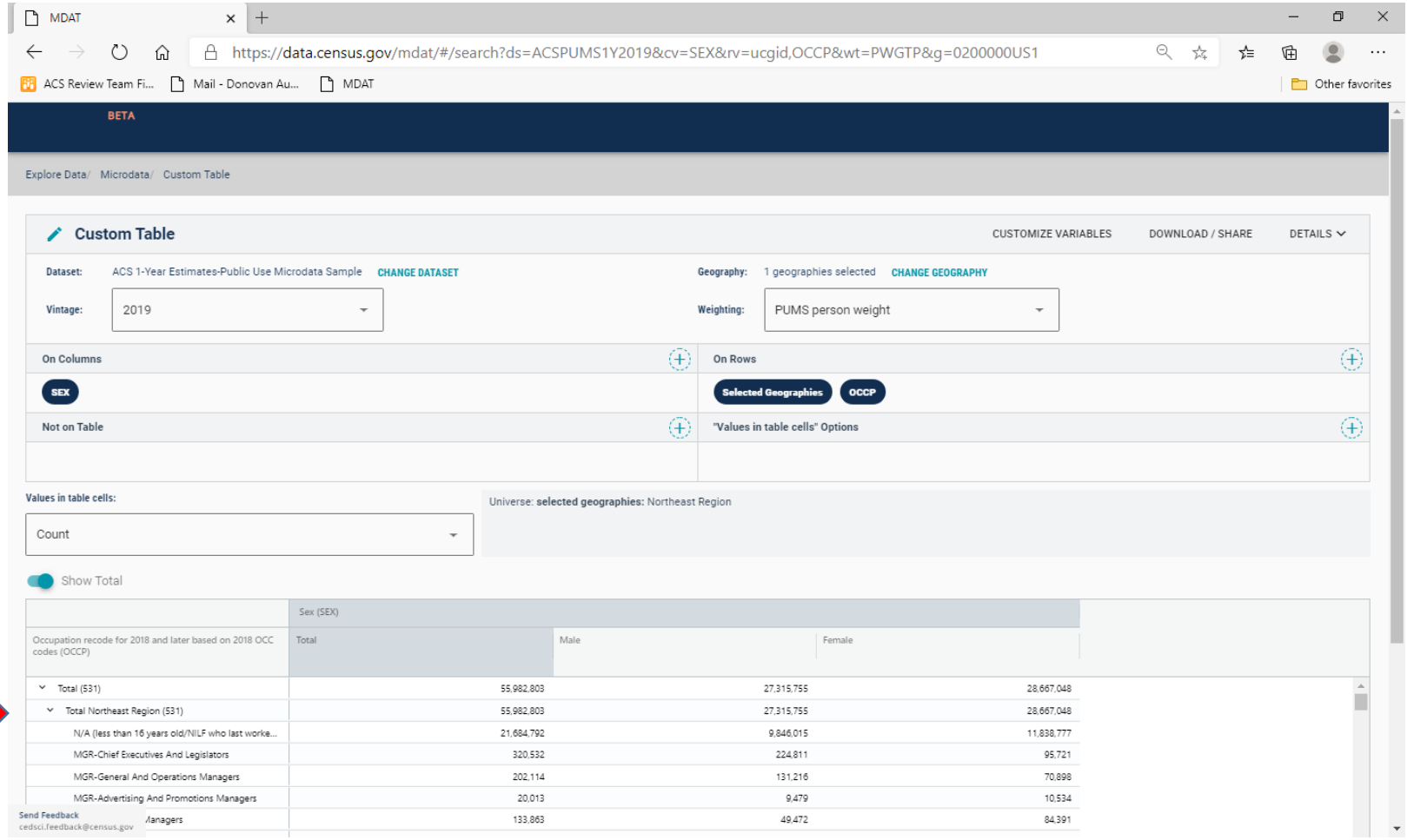
United States® Census Bureau

Return to Table of Contents

# 9. Select Geographies

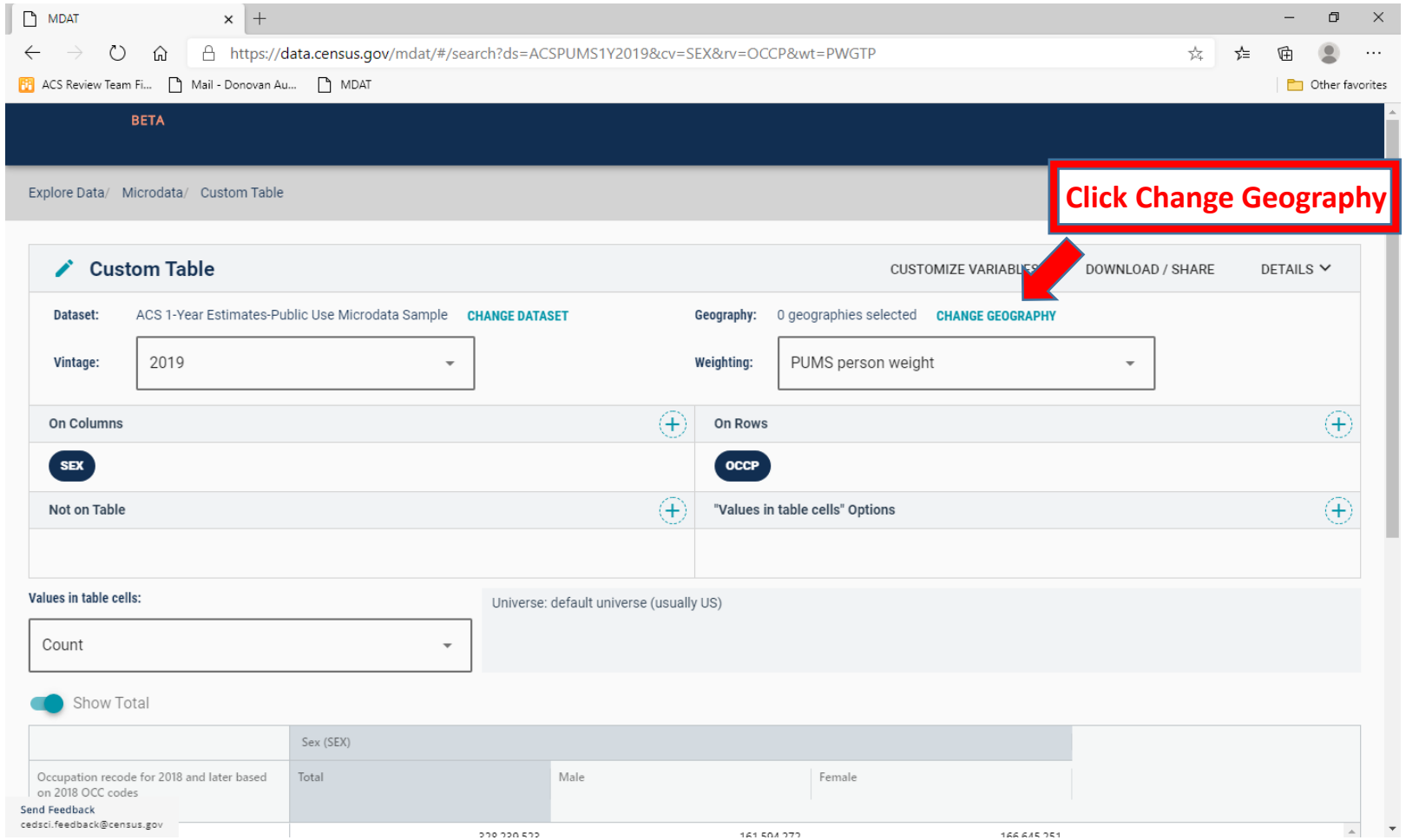
The selected region will now appear in your existing table as a subcategory under “Total”.

**Region Appears on Table**




Return to Table of Contents

# 10. Select Two or More Geographies



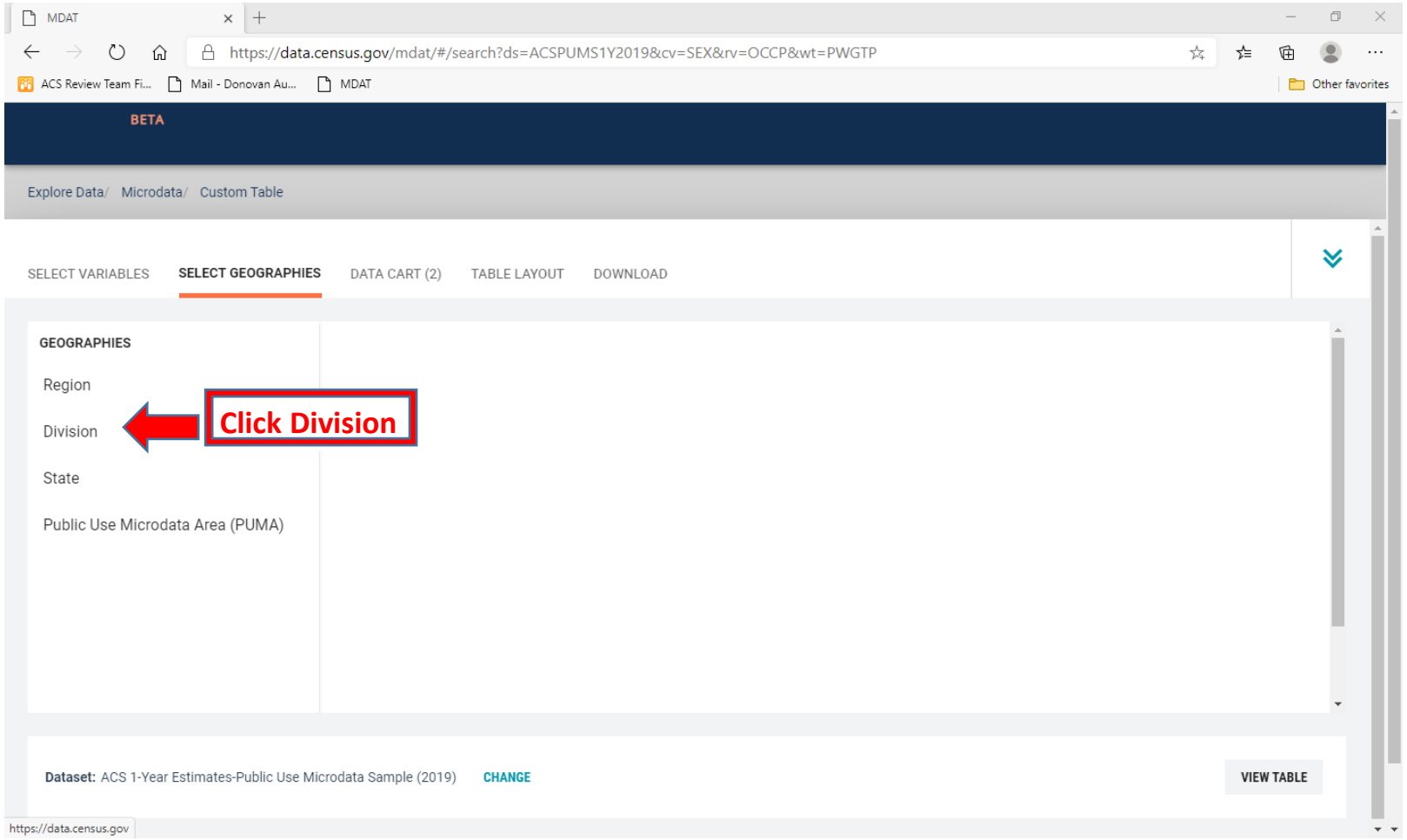

Now, let us look at how to modify the table by selecting specific geographies.

Click “Change Geography” on the right side of the custom table.

United States® Census Bureau

Return to Table of Contents

# 10. Select Two or More Geographies




After clicking “Change Geography” under custom table, you should be redirected to this page where you will see “Select Geographies” underscored.

Click “Division” under GEOGRAPHIES.

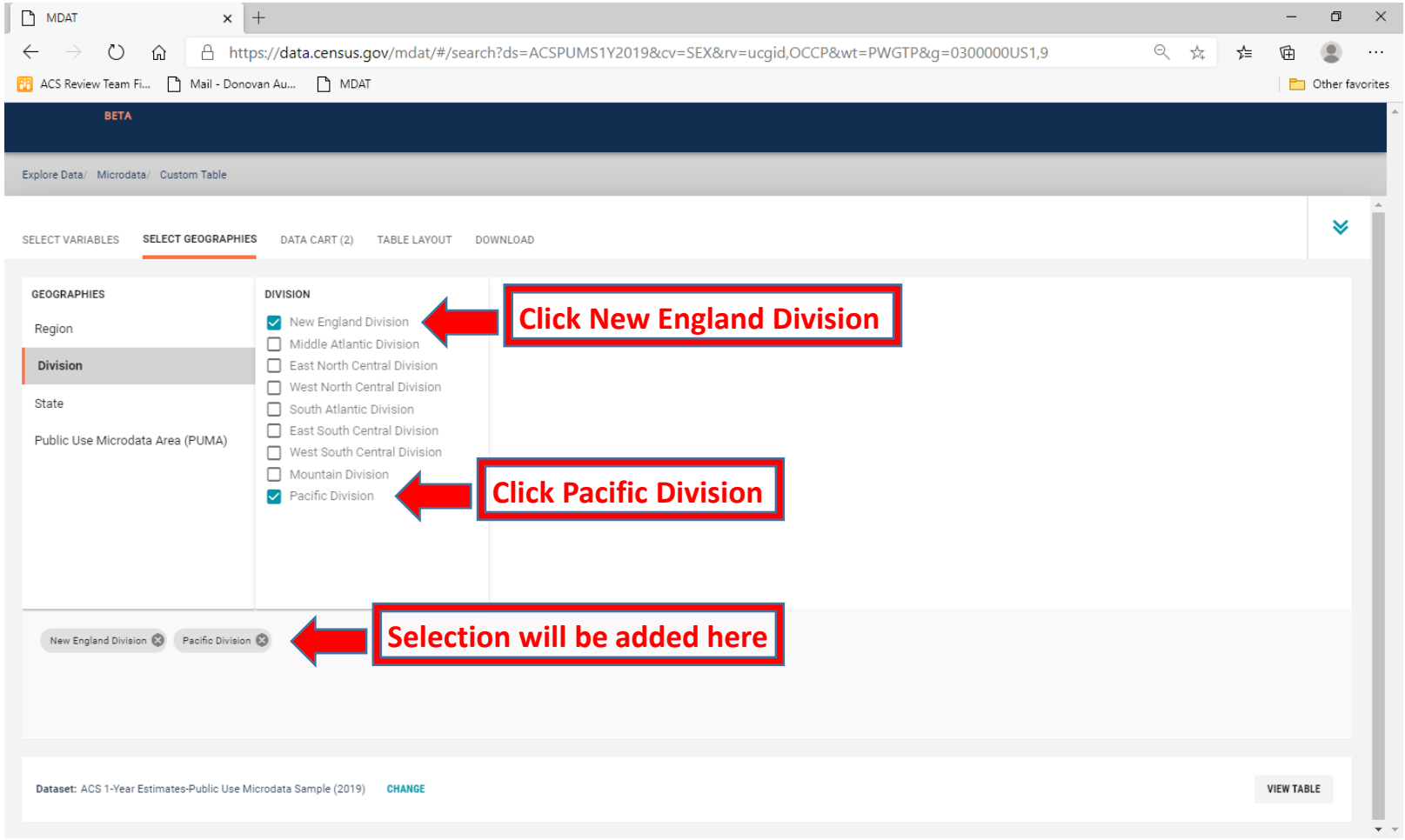
Return to Table of Contents

# 10. Select Two or More Geographies

First, clear out any preselected geographies (e.g., Northeast Region). Overlapping geographies will produce a data error when constructing the final table.

Select two divisions: “New England Division” and “Pacific Division”.

Once selected, your selection should appear at the bottom of the screen.

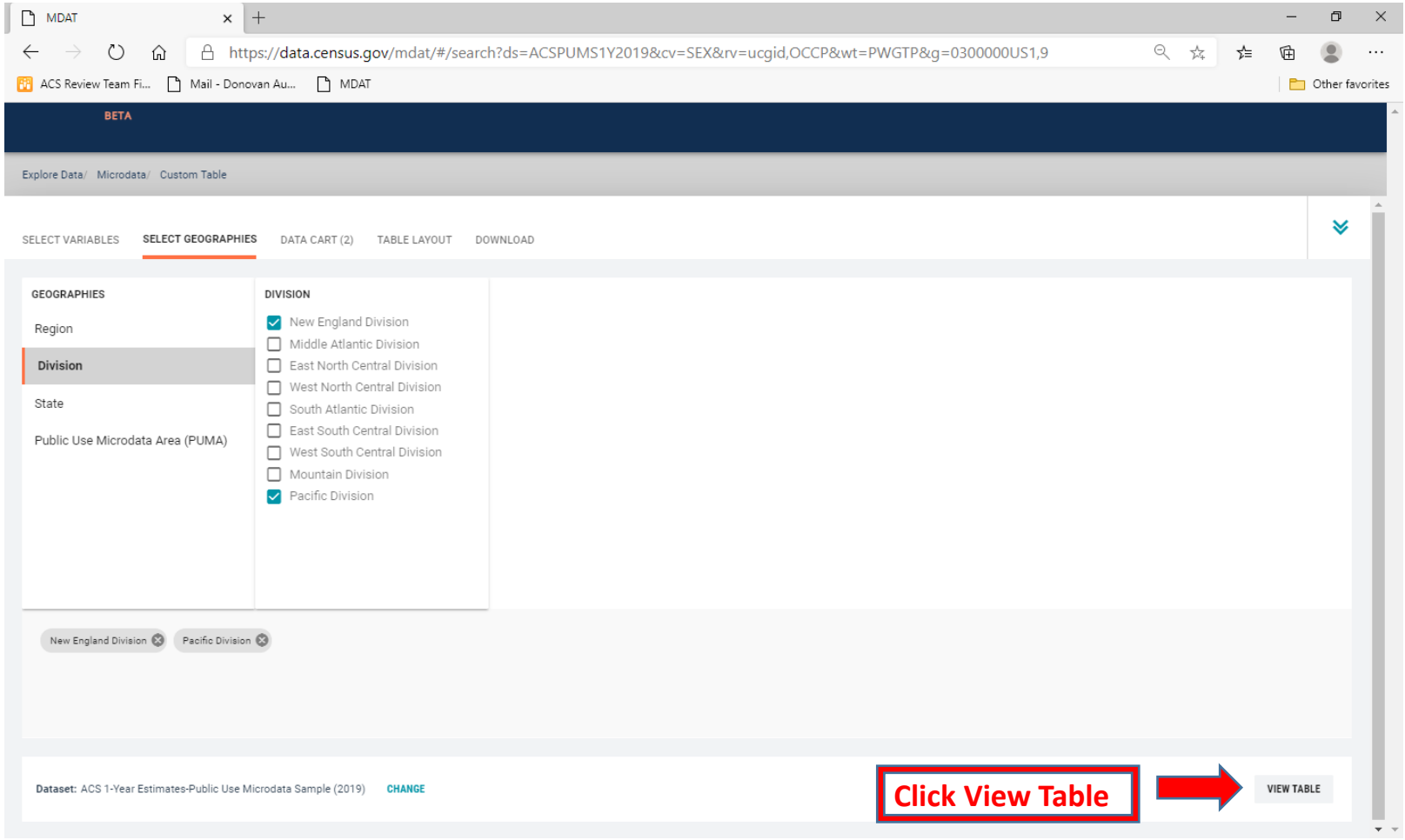



United States® Census Bureau

Return to Table of Contents

# 10. Select Two or More Geographies

Click “View Table”.



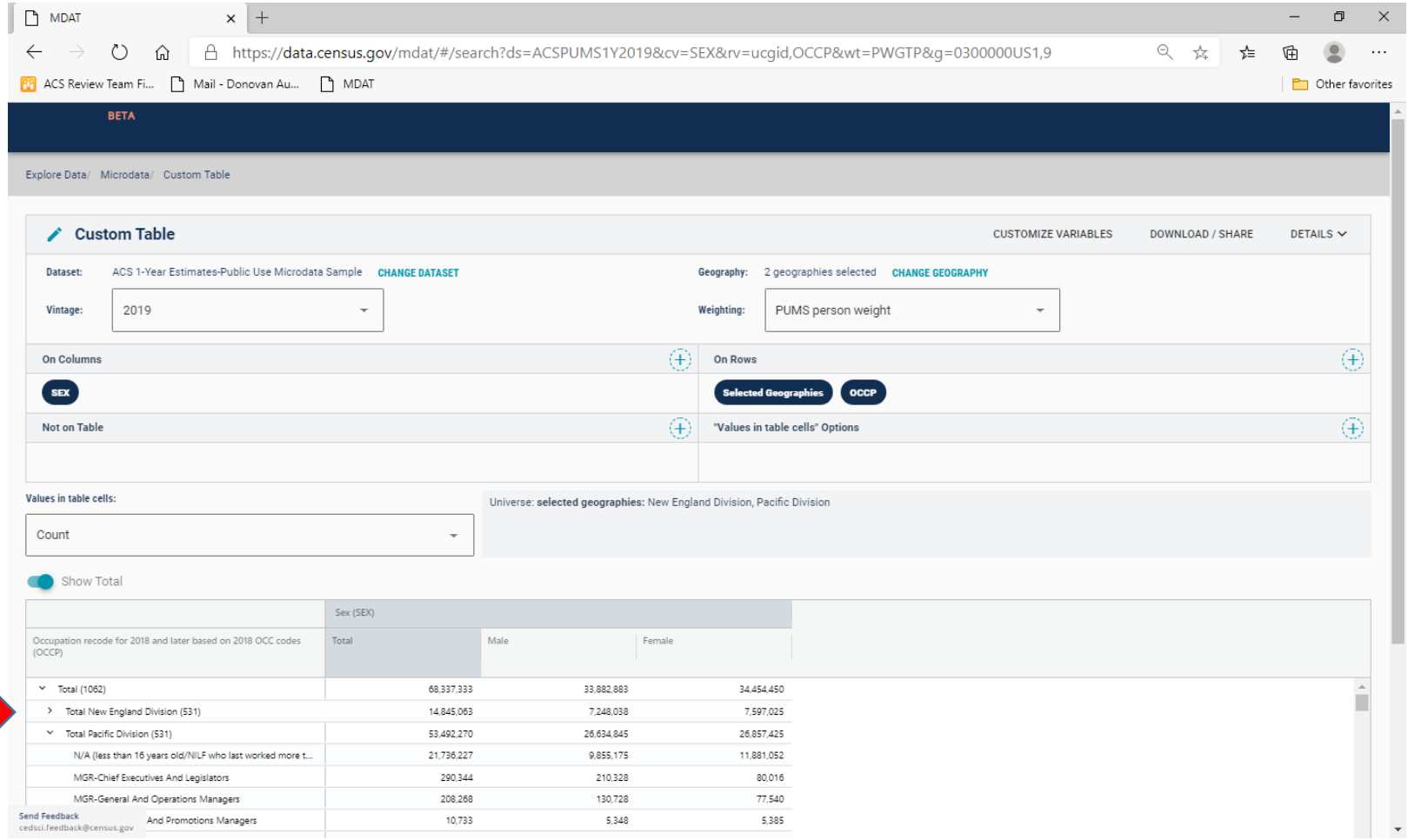

Return to Table of Contents

# 10. Select Two or More Geographies

Your two selected divisions: “New England Division” and “Pacific Division” should appear in the table.

You can click on the drop-down arrows to expand or collapse the data for the different divisions.

**Both divisions appear in table**



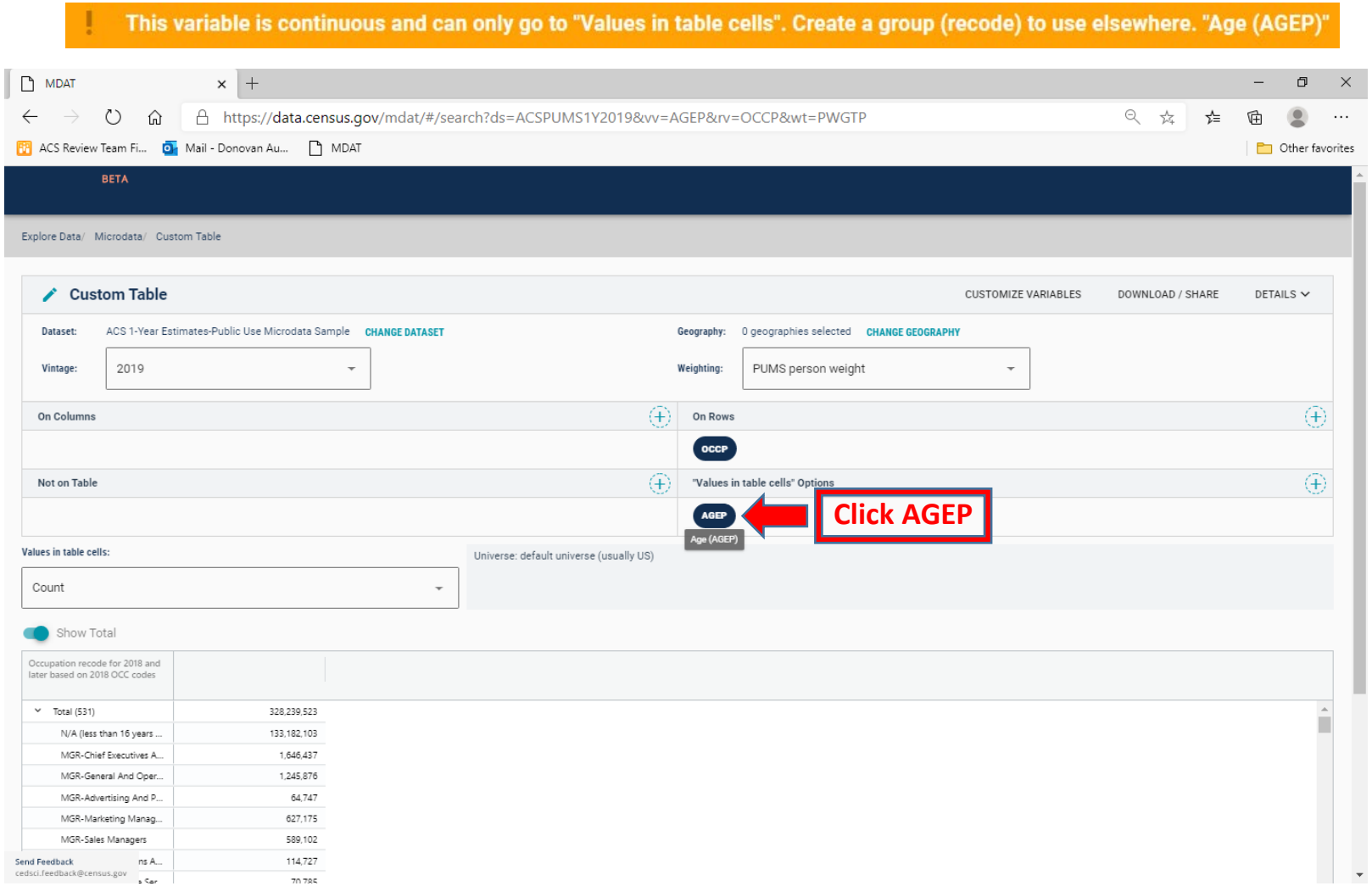

Return to Table of Contents

# 11. Age Recode

Before you begin, set up a table with the “OCCP” and “AGEP” variables.

To begin the multistep process to recode the age variable, click “AGEP”.

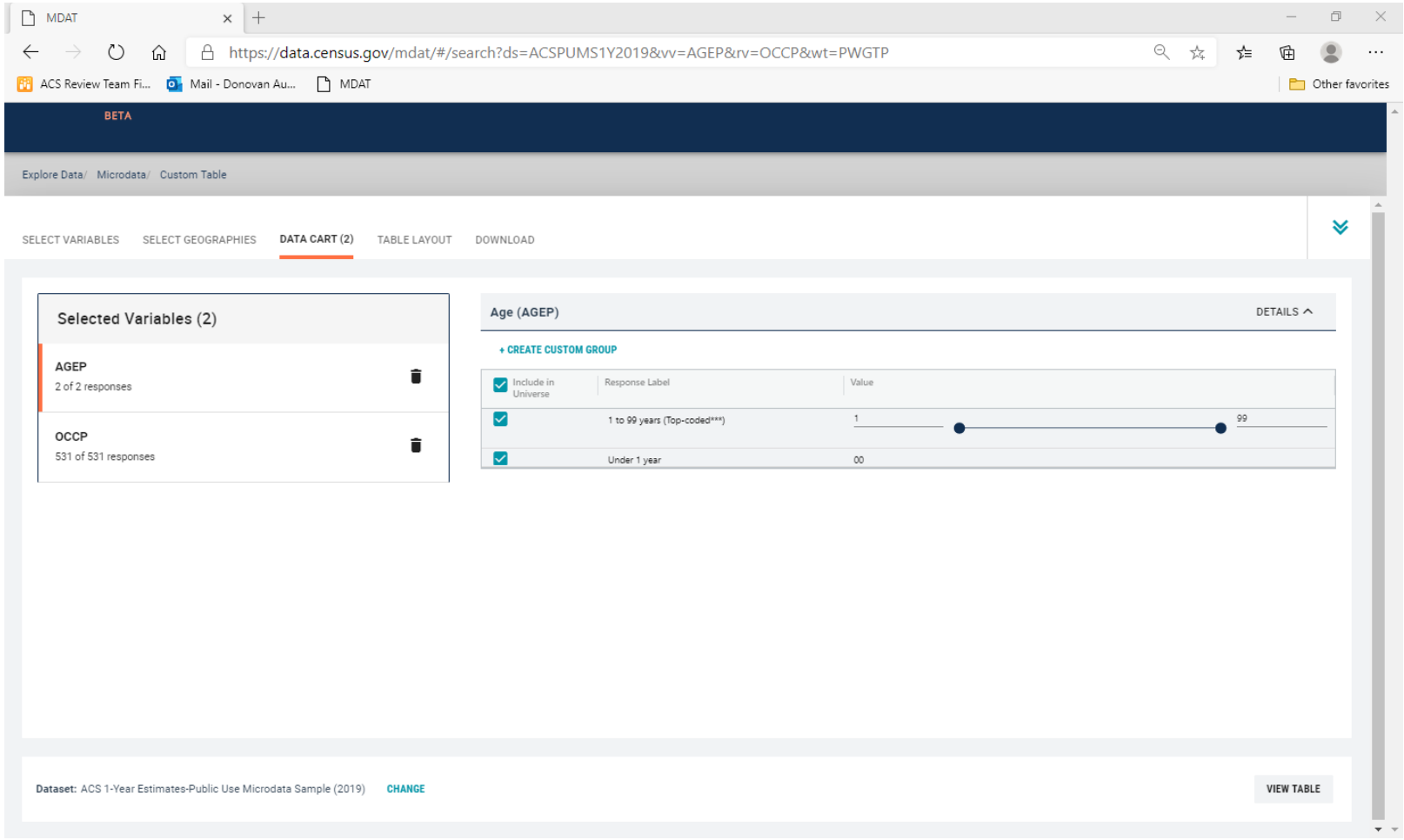
You have to click Customize variables to get back to the Select Variables option. AGEP is the first variable in the dataset. So, there is no need to search for it. Click View Table to see the table as shown in the image here.




Return to Table of Contents

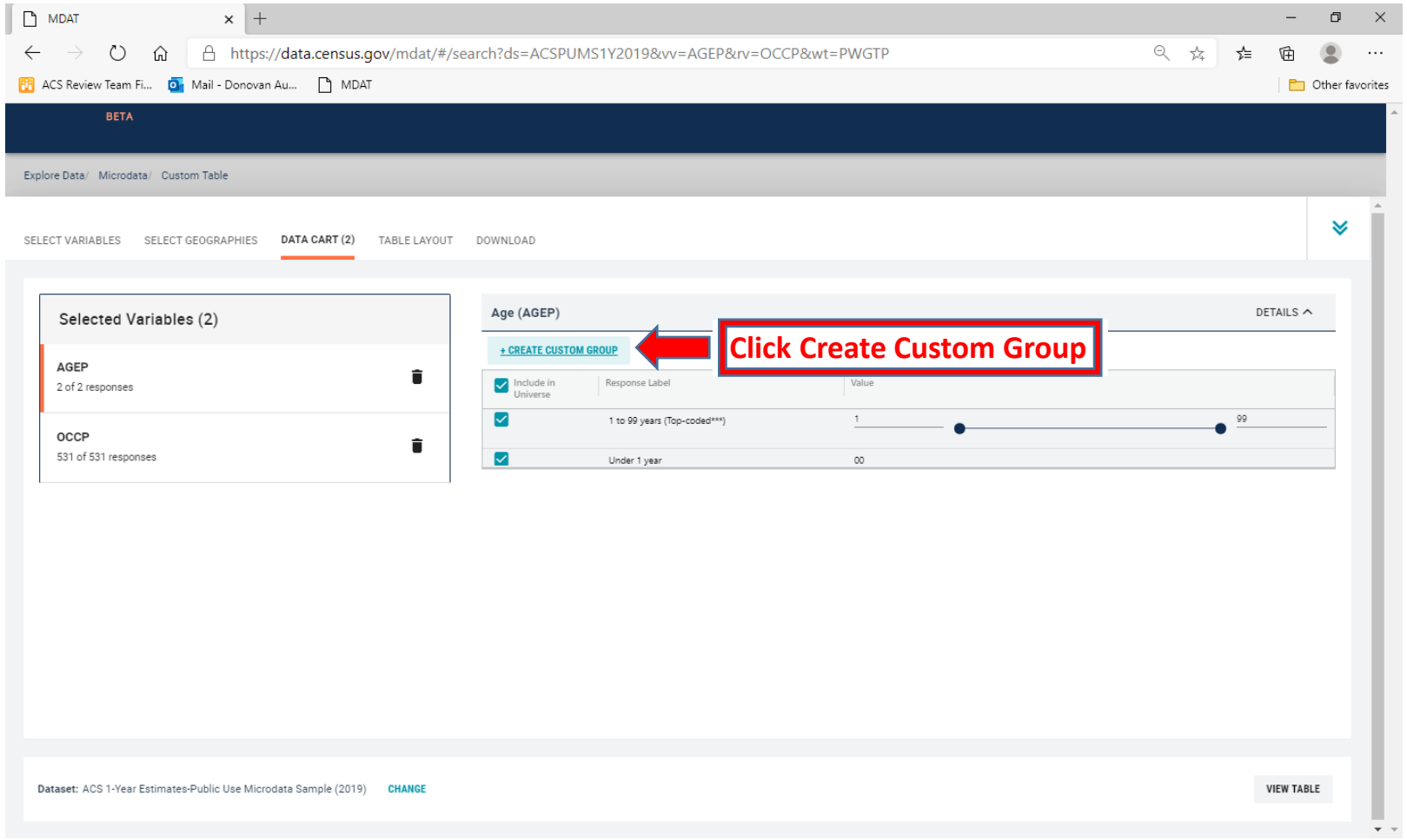
# 11. Age Recode

You will be taken to the following screen to recode the age variable.




Return to Table of Contents

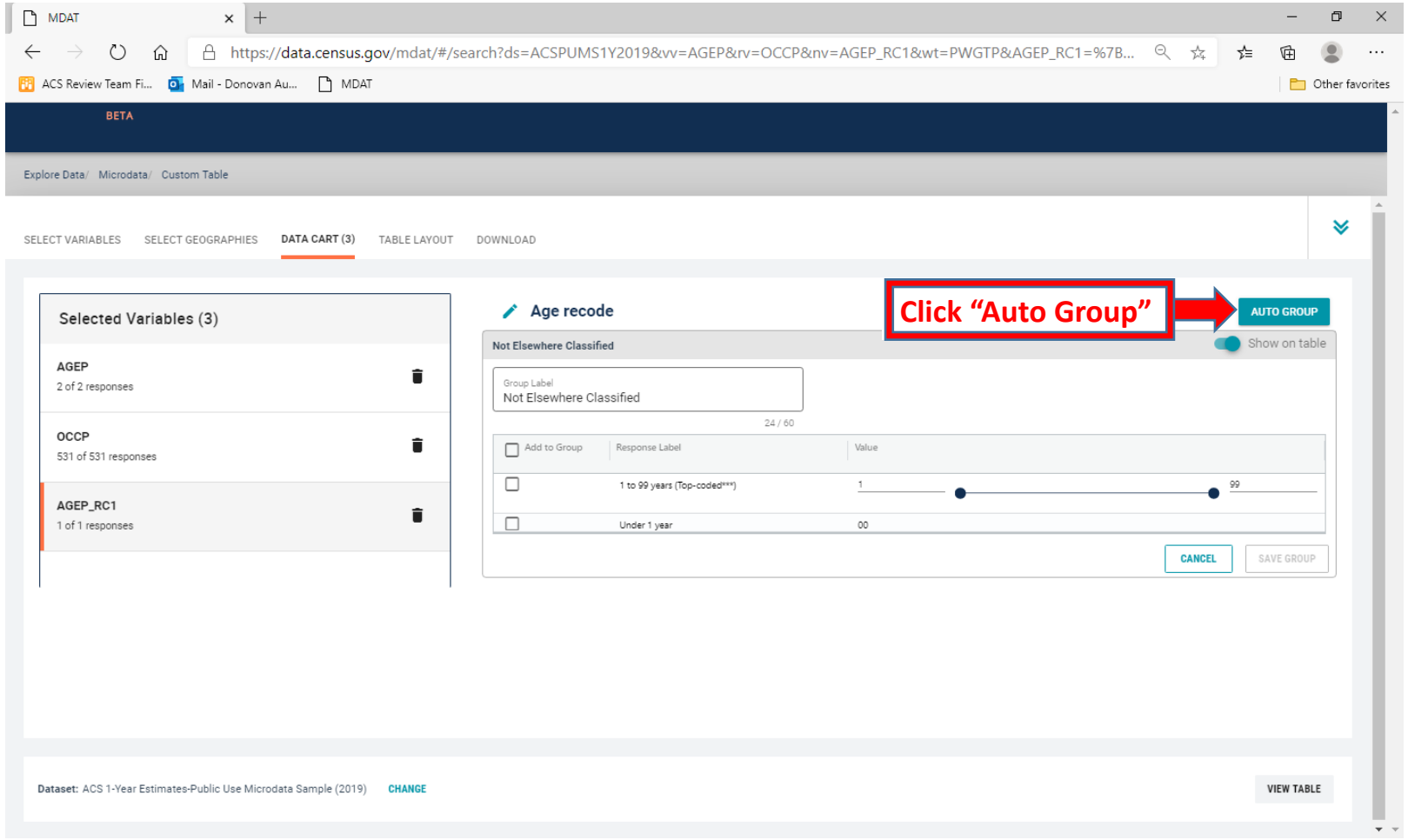
# 11. Age Recode




Click “Create Custom Group” to continue the steps to recode the age variable.

Return to Table of Contents

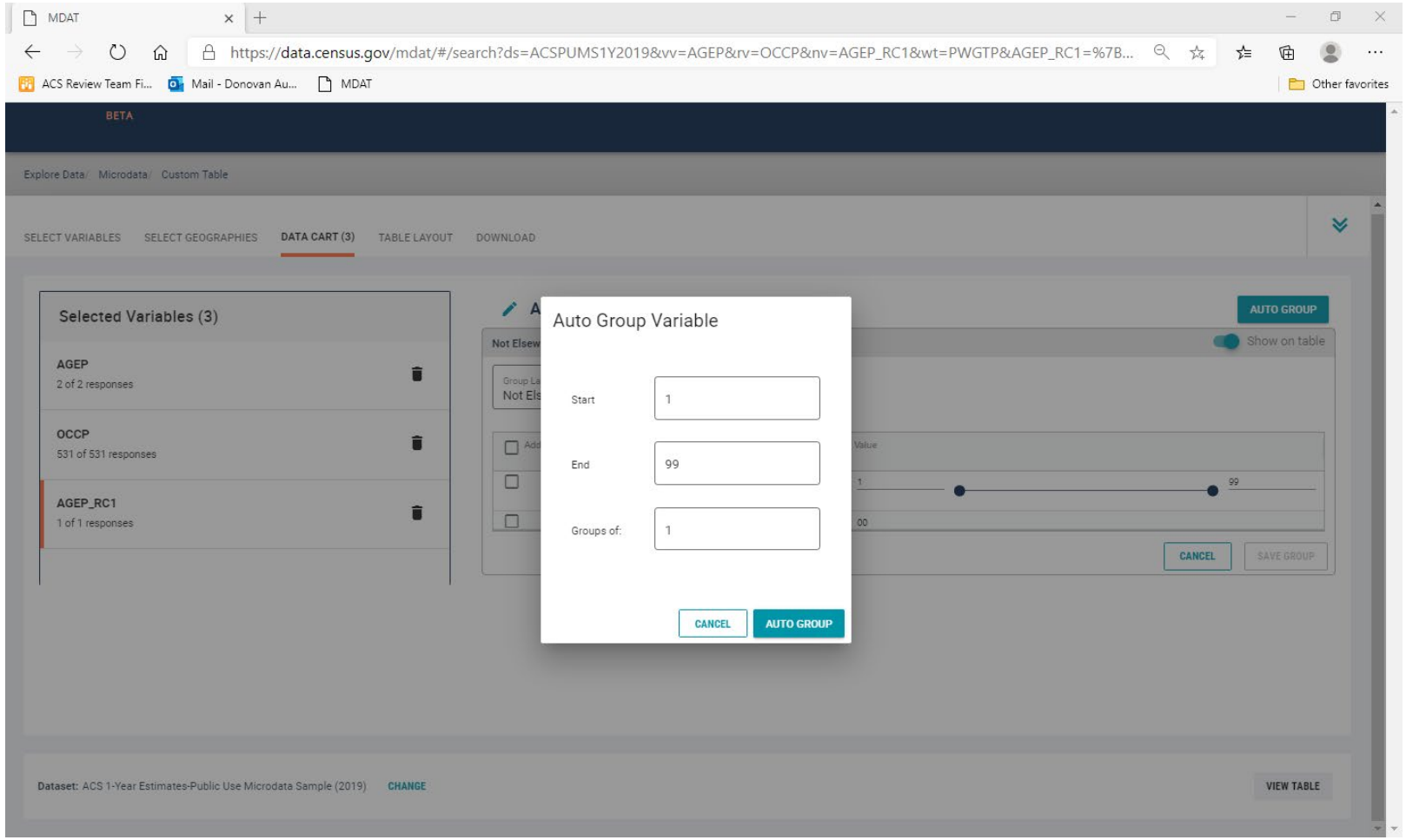
# 11. Age Recode




Click "Auto Group" to continue the steps to recode the age variable.

Return to Table of Contents

# 11. Age Recode




Click “Auto Group” to continue the steps to recode the age variable.

There are three entries that will be important to recode the age variable: start, end, and groups of.

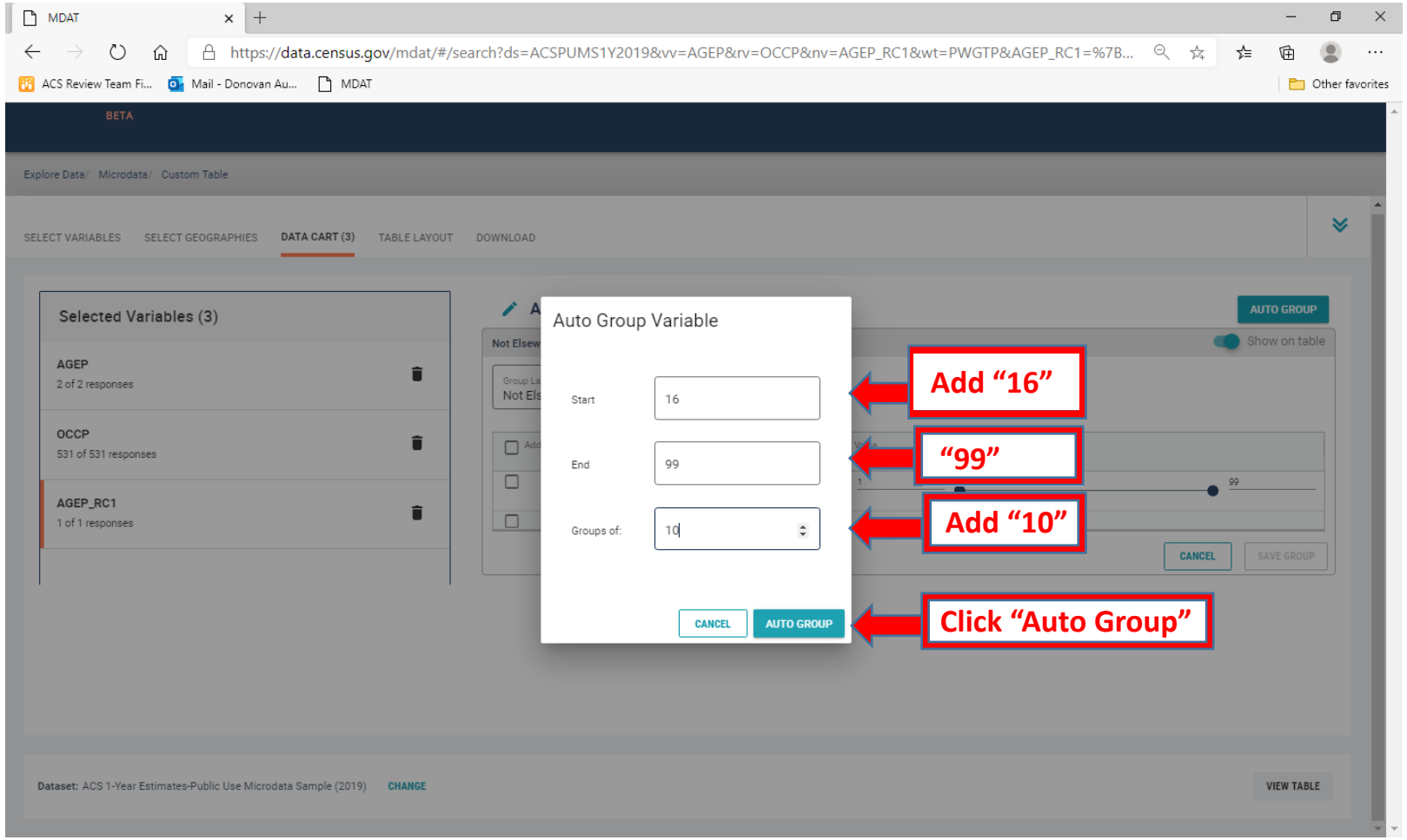
**Start**: the minimum number of the recode. In this case for a table with the occupation variable, we will enter 16. The occupation variable does not include individuals who are younger than 16 years old.

**End**: the maximum number of the recode. In this case, the maximum age which is 99. This include all individuals up to 99 years old.

**Groups of**: this represents the number that will be in each group. Let us use “10”. This will create groups of 10 starting at 16. For example, the first group will be 16-25 years old.

Return to Table of Contents

# 11. Age Recode




Start: Add "16"

End: "99"

Groups of: Add "10"

Once the categories are completed, click "Auto Group".

Return to Table of Contents

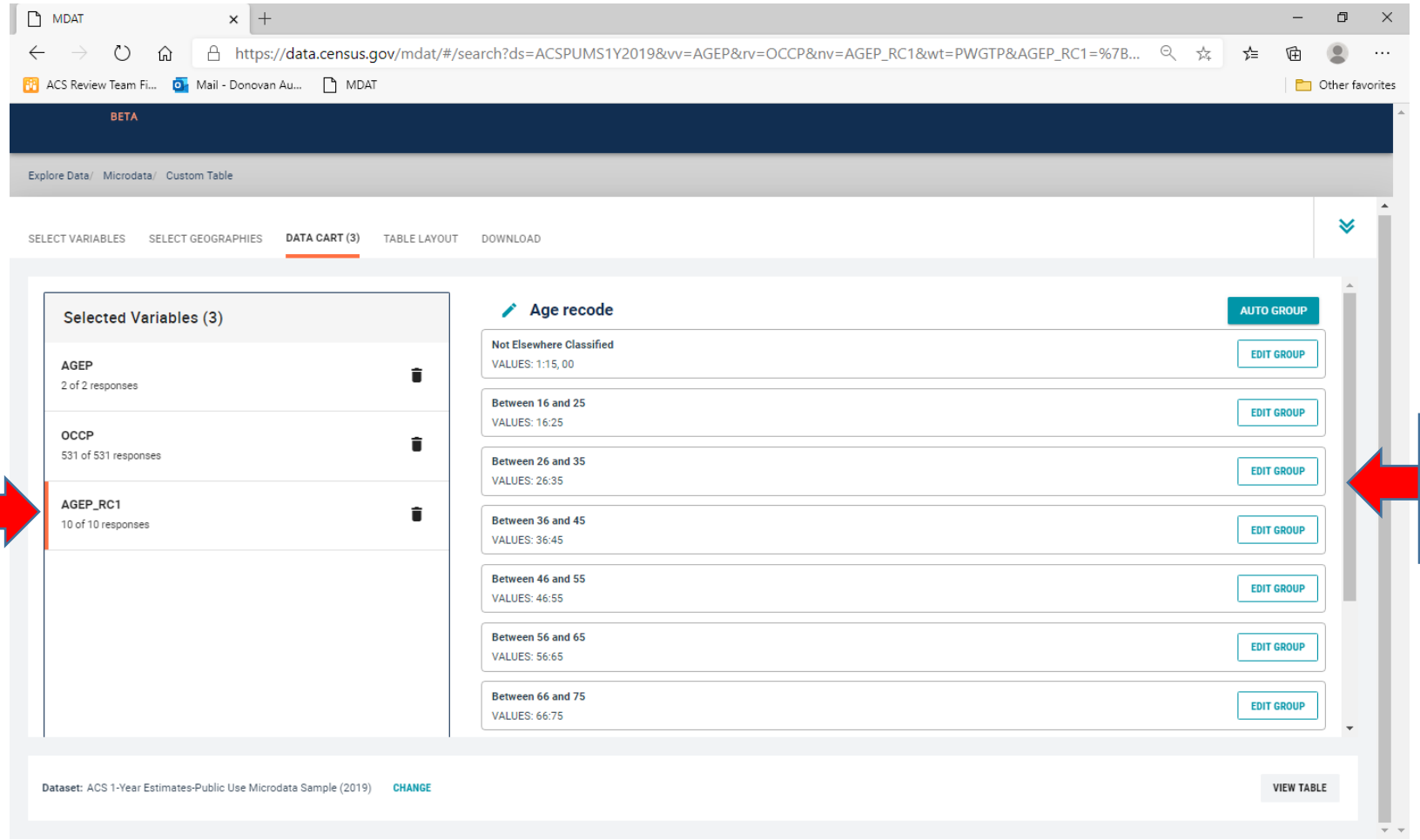
# 11. Age Recode

Your recode will appear in detail on the left-hand side of this page.

A new variable will appear under selected variables with "_RC1" amended to it.

In this case, the new variable should be listed as "AGEP_RC1".

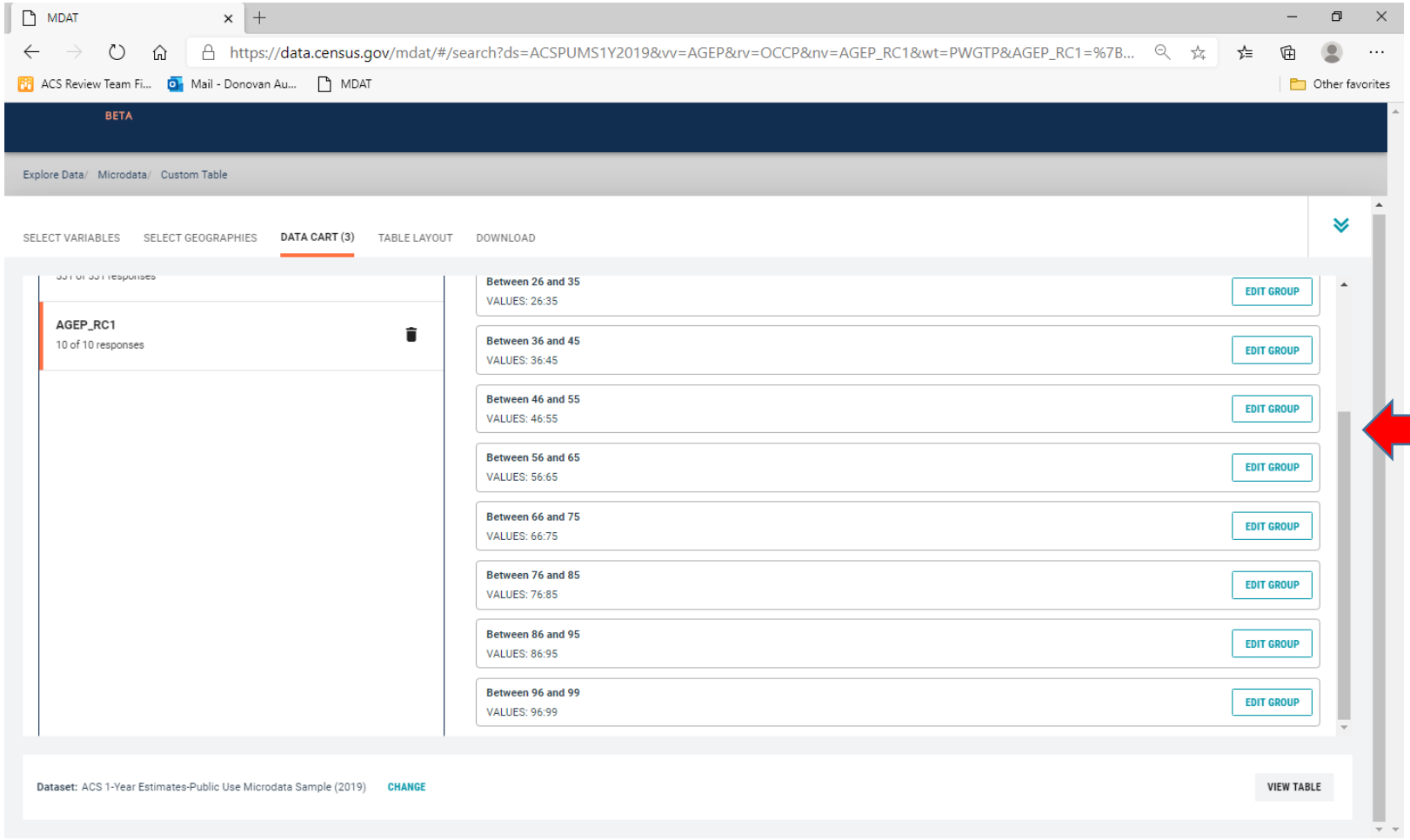
**New Variable Added**




**Scroll down to see all recode categories**

Return to Table of Contents

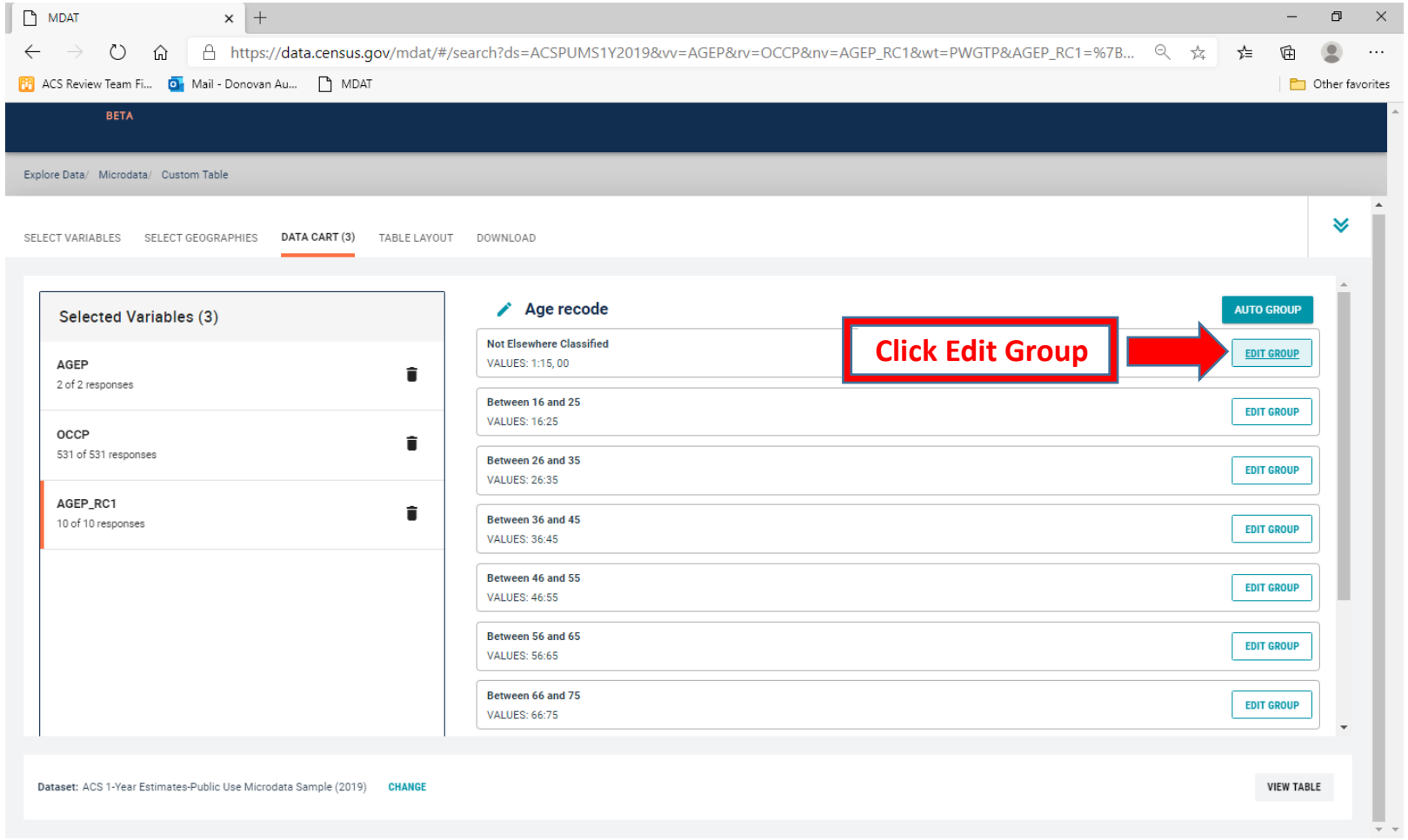
# 11. Age Recode




**Scroll up to see all recode categories.**

Return to Table of Contents

# 11. Age Recode

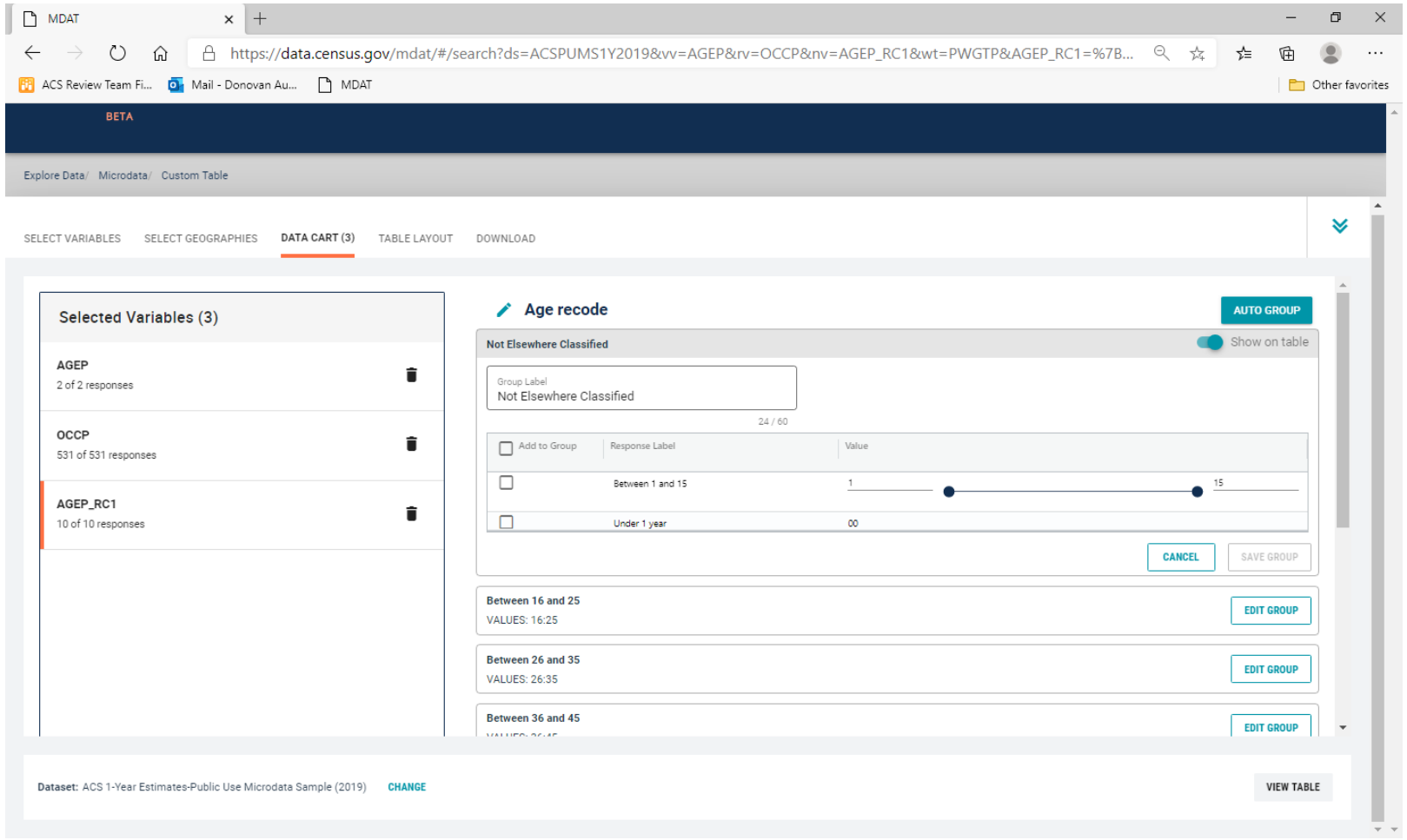



We are going to exclude values from our table that are outside of our recode. In this case, all individuals between the ages of 0 and 15 years old.

Click “Edit Group”.

Return to Table of Contents

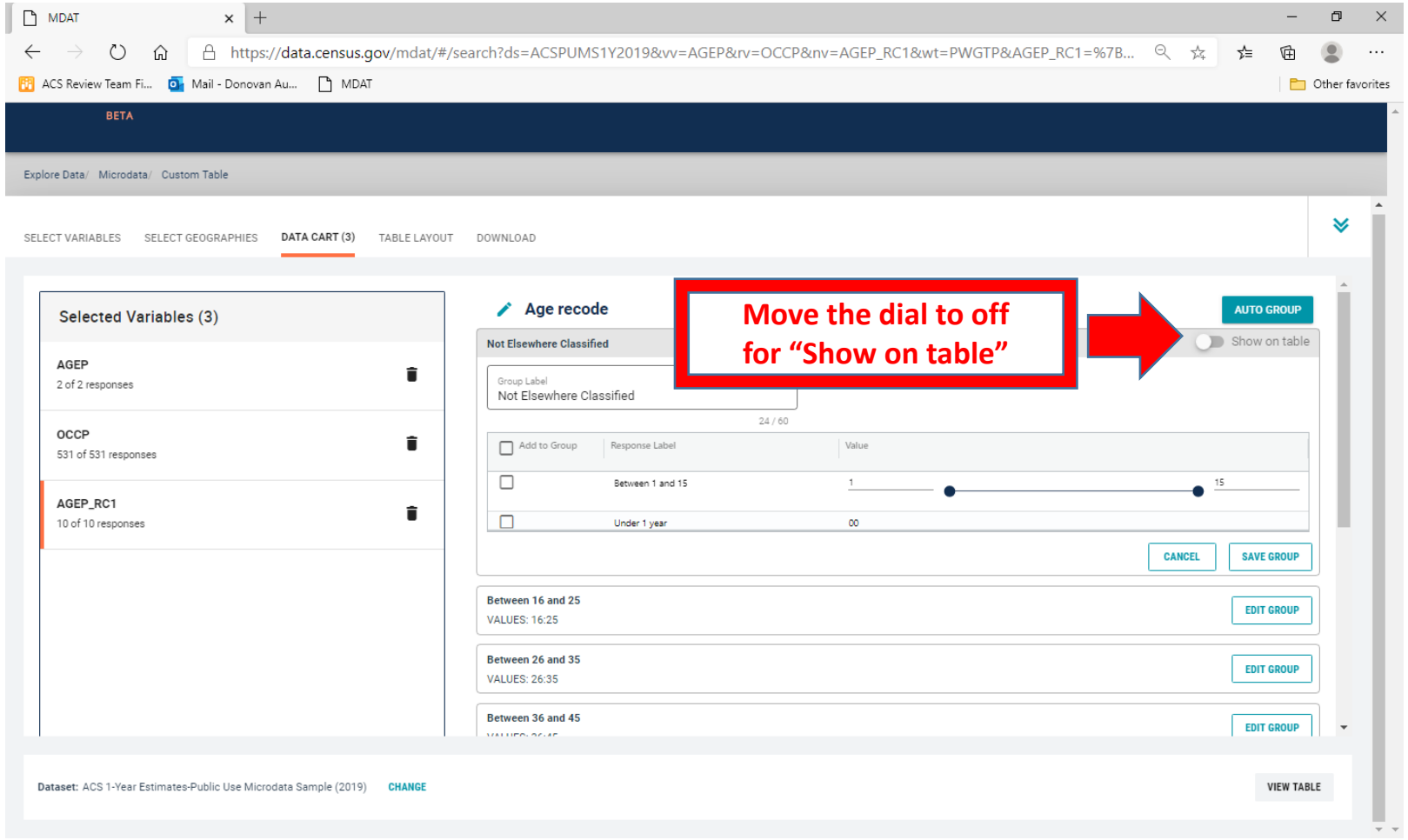
# 11. Age Recode




The following screen will appear.

Return to Table of Contents

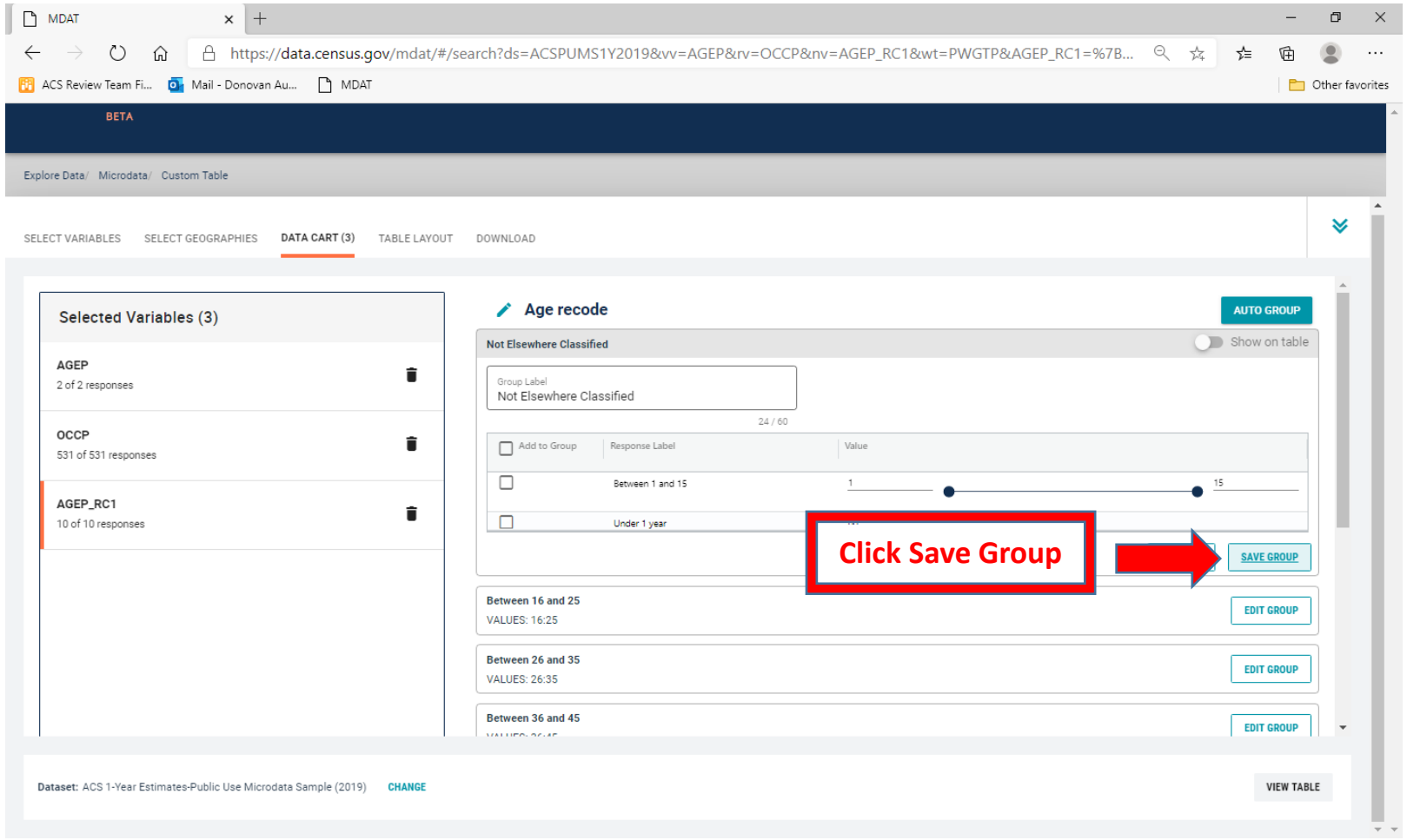
# 11. Age Recode




Move the dial to off for "Show on table". When off, the dial and text should be grayed out.

Return to Table of Contents

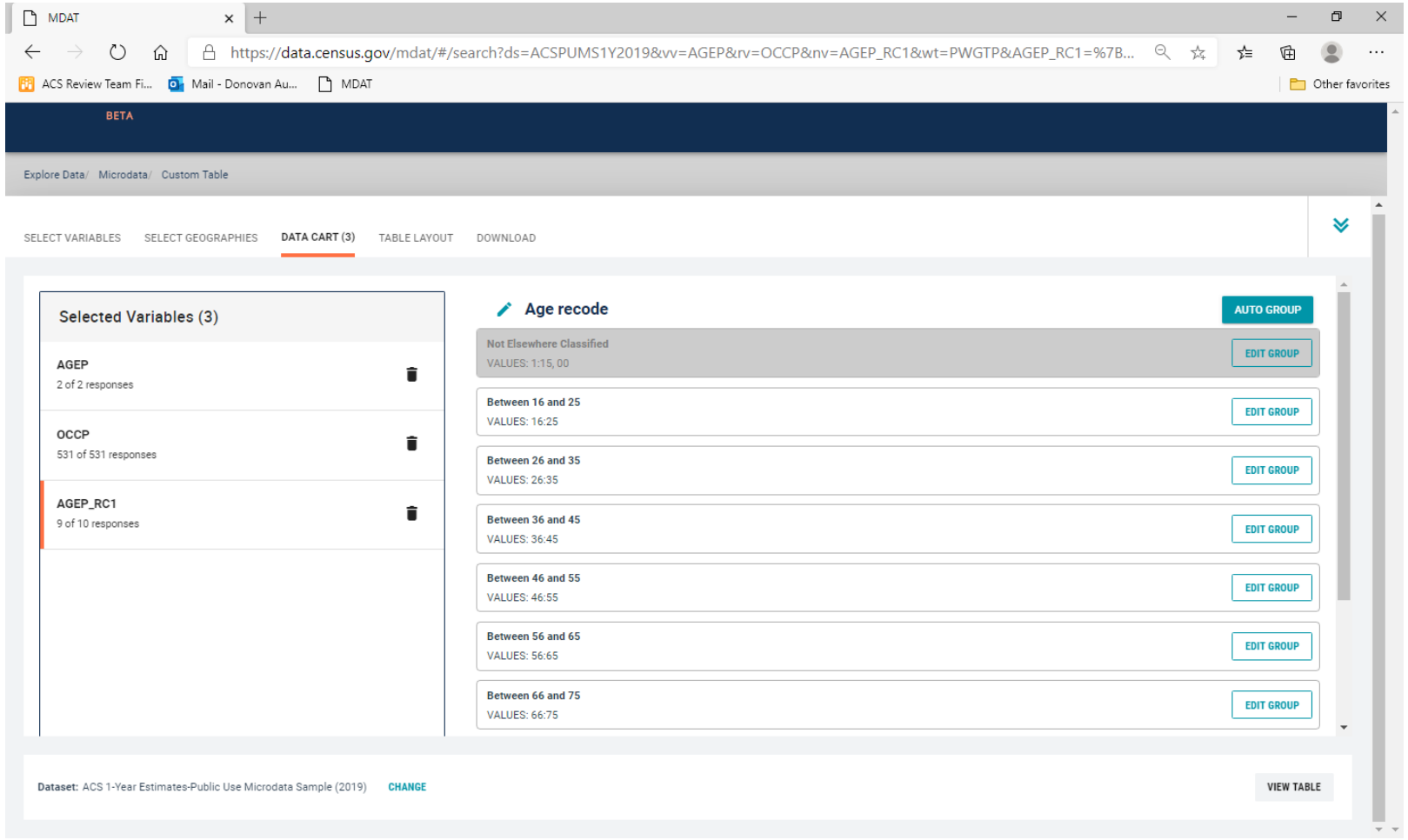
# 11. Age Recode




To finalize change of removing this recode category from the final table, click “Save Group”.

Return to Table of Contents

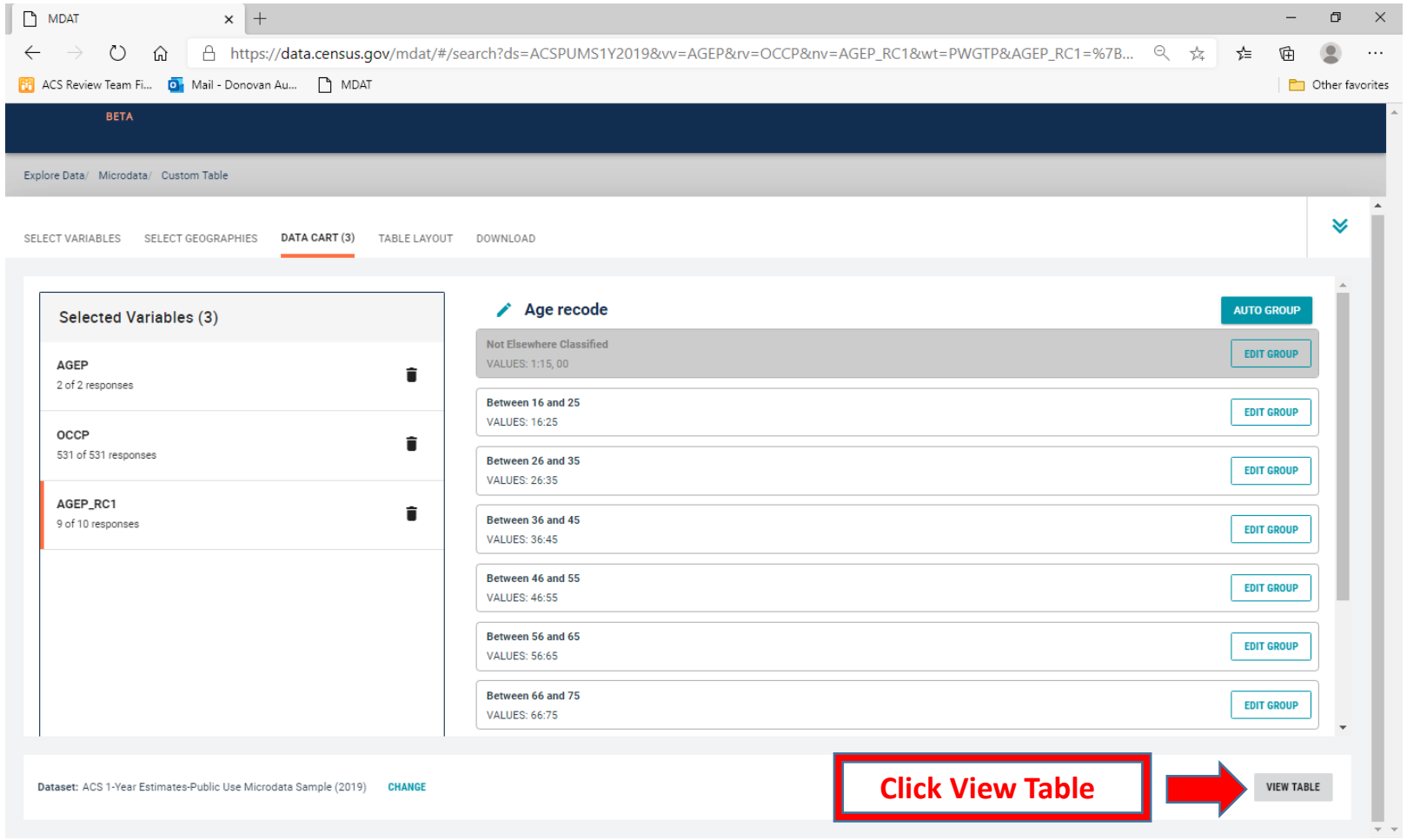
# 11. Age Recode




The removed group will now be grayed out.

Return to Table of Contents

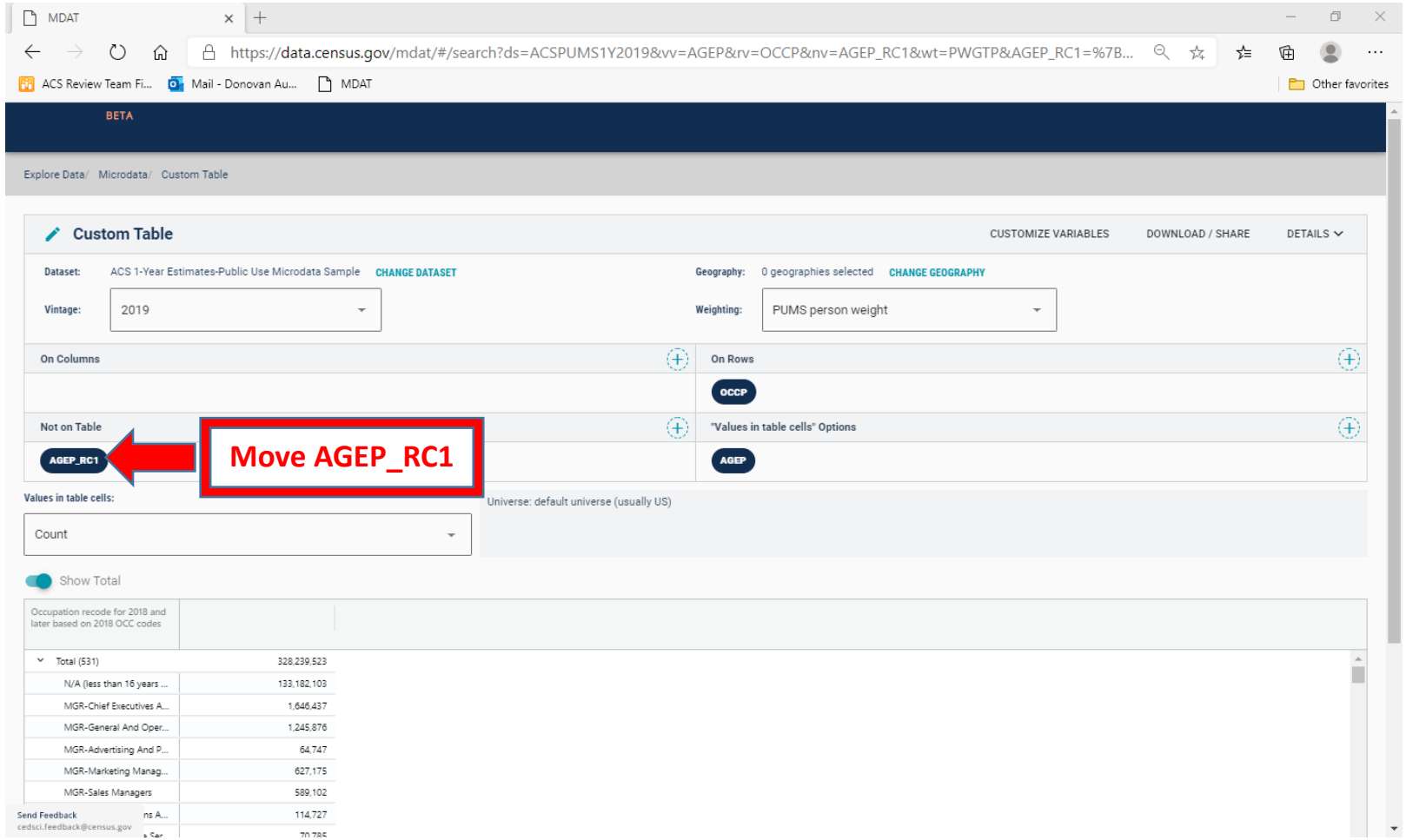
# 11. Age Recode




Click “View Table” to add the final recoded age variable, “AGEP_RC1”.

Return to Table of Contents

# 11. Age Recode




The current table shows the occupation variable, “OCCP”, in rows, but does not currently include a columns variable.

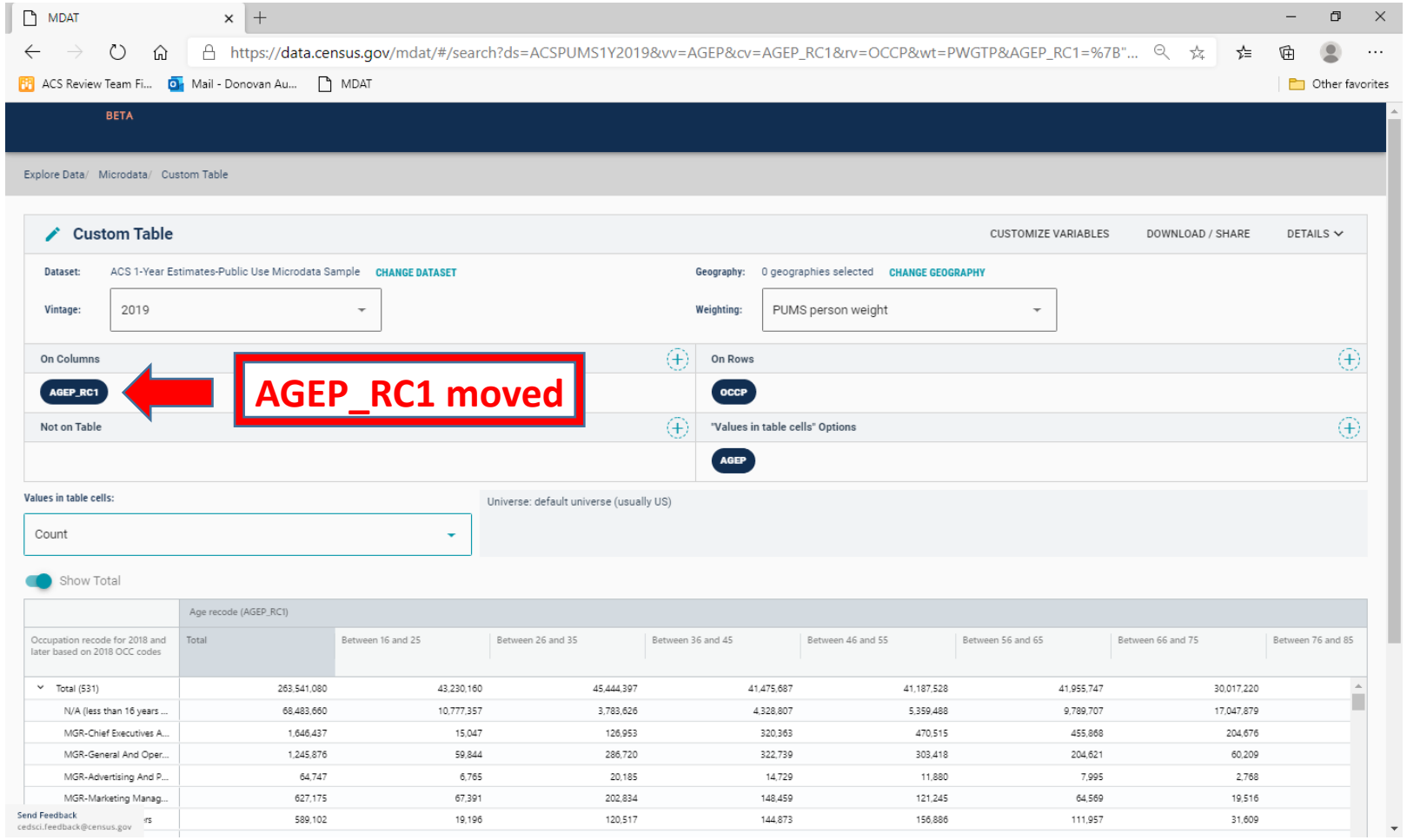
Drag and drop “AGEP_RC1” from “Not on Table” section to the “On Columns” section.

*NOTE: your screen might look slightly different if you did not begin this section with just the AGEP and the OCCP variables.*

United States® Census Bureau

Return to Table of Contents

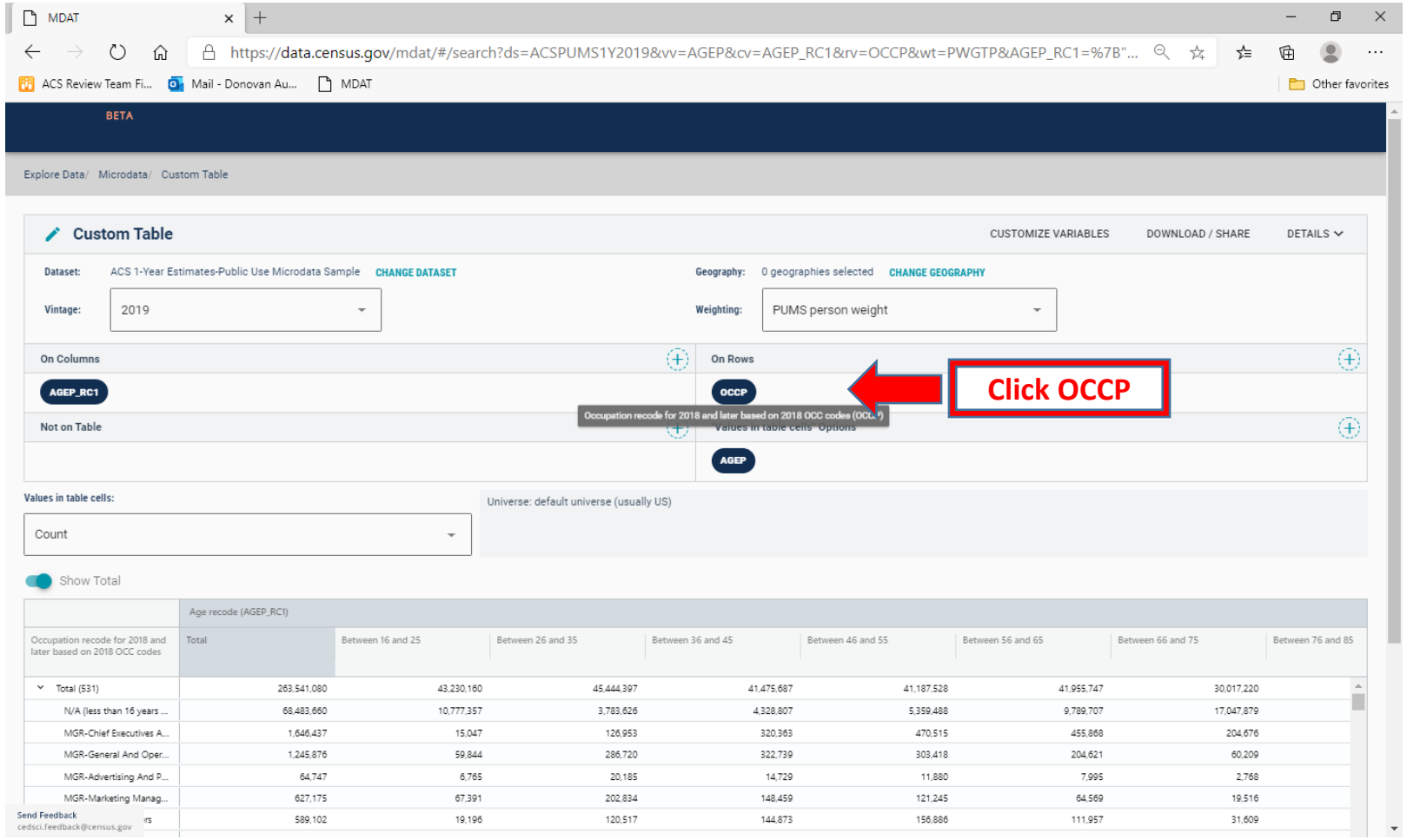
# 11. Age Recode




United States® Census Bureau

Return to Table of Contents

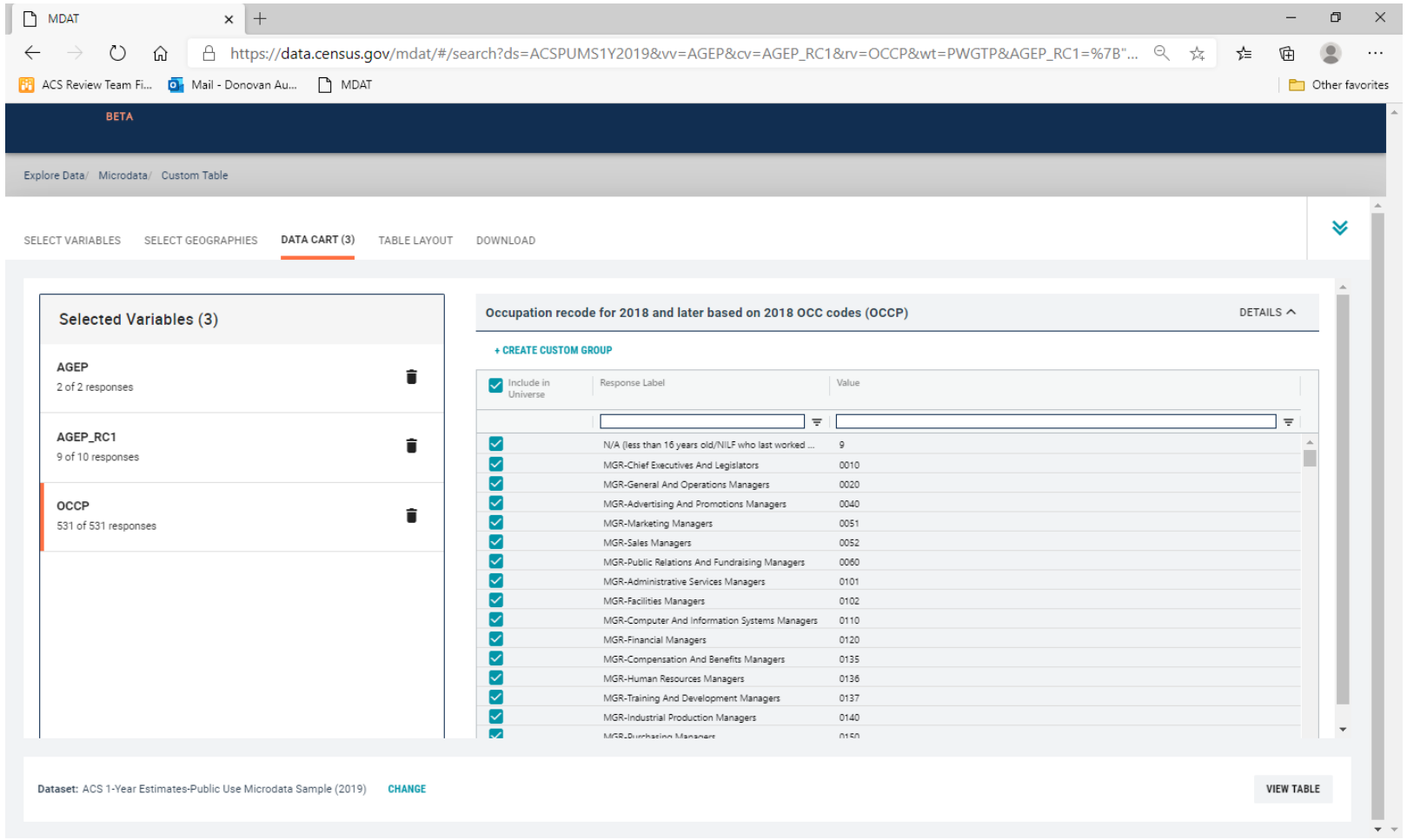
# 12. Occupation Recode




Click “OCCP” to begin the recode process for the OCCP variable.

Return to Table of Contents

# 12. Occupation Recode

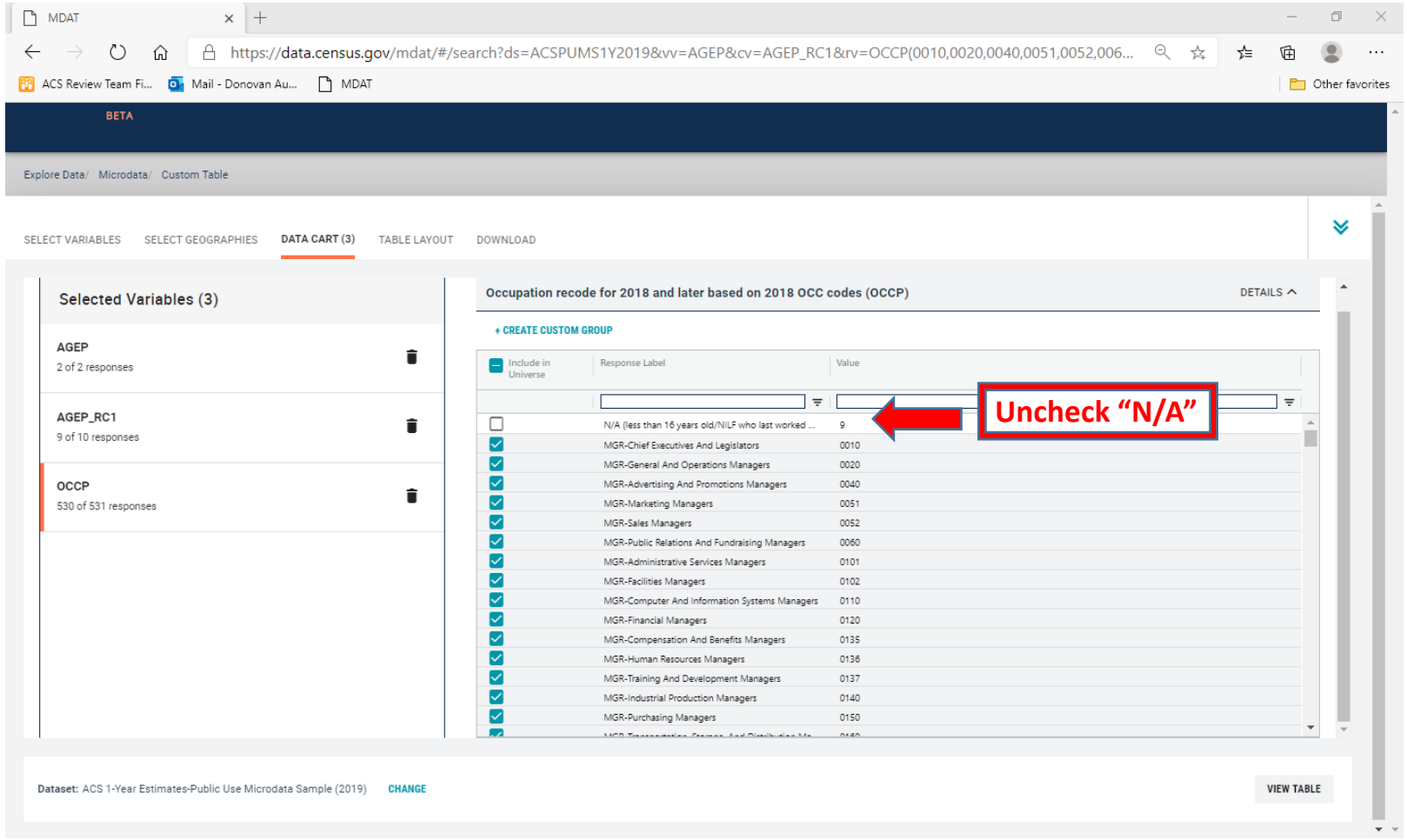



The following page will appear which will allow you to select and deselect your occupations of interest.

In this instance, we will deselect variables that are not typical for a standard Census table that includes the occupation variable.

Return to Table of Contents

# 12. Occupation Recode




Uncheck the "N/A" category and scroll down to the bottom of the table.

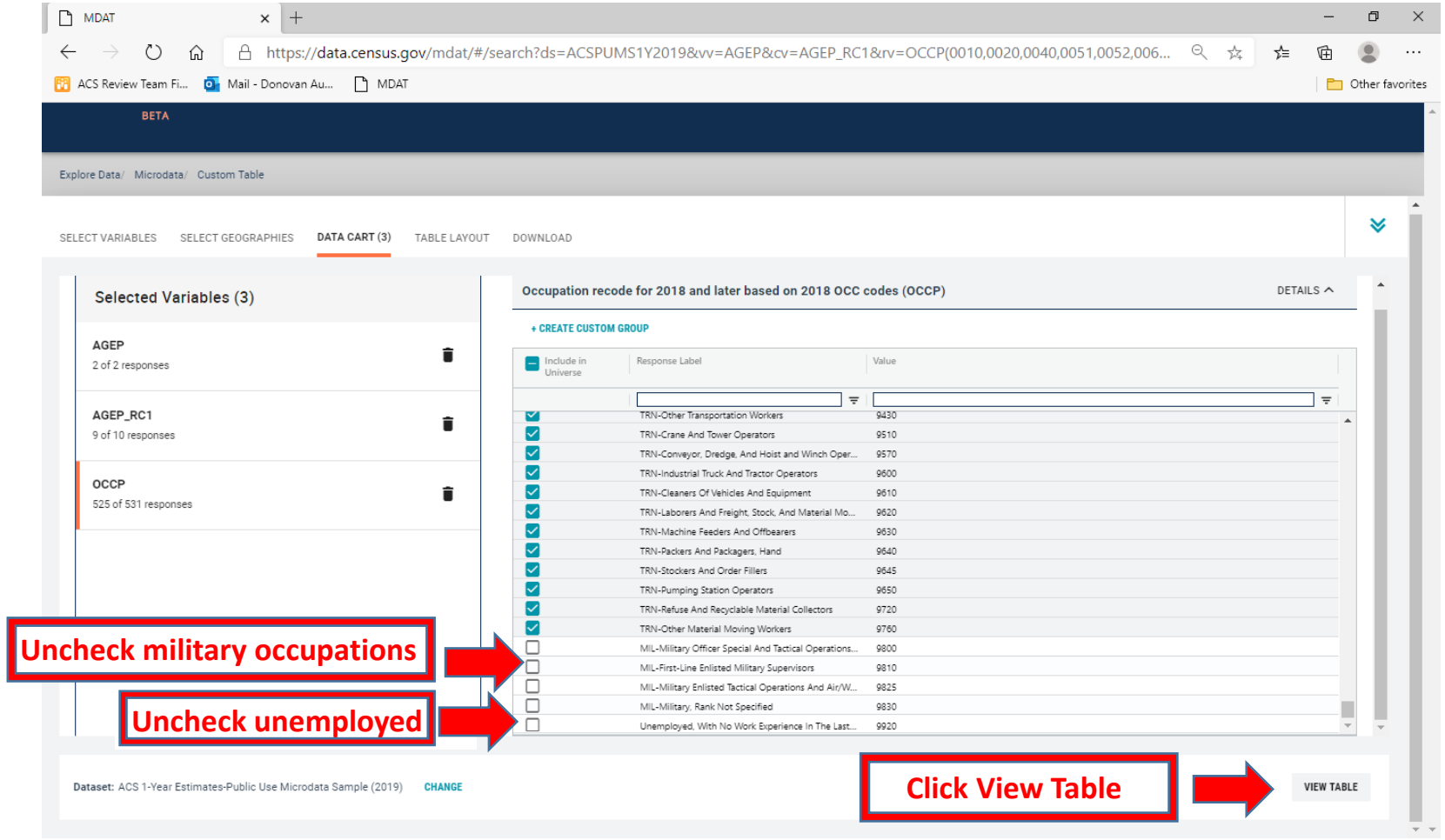
Return to Table of Contents

# 12. Occupation Recode

After scrolling down to the bottom of the recode table, uncheck the boxes for:

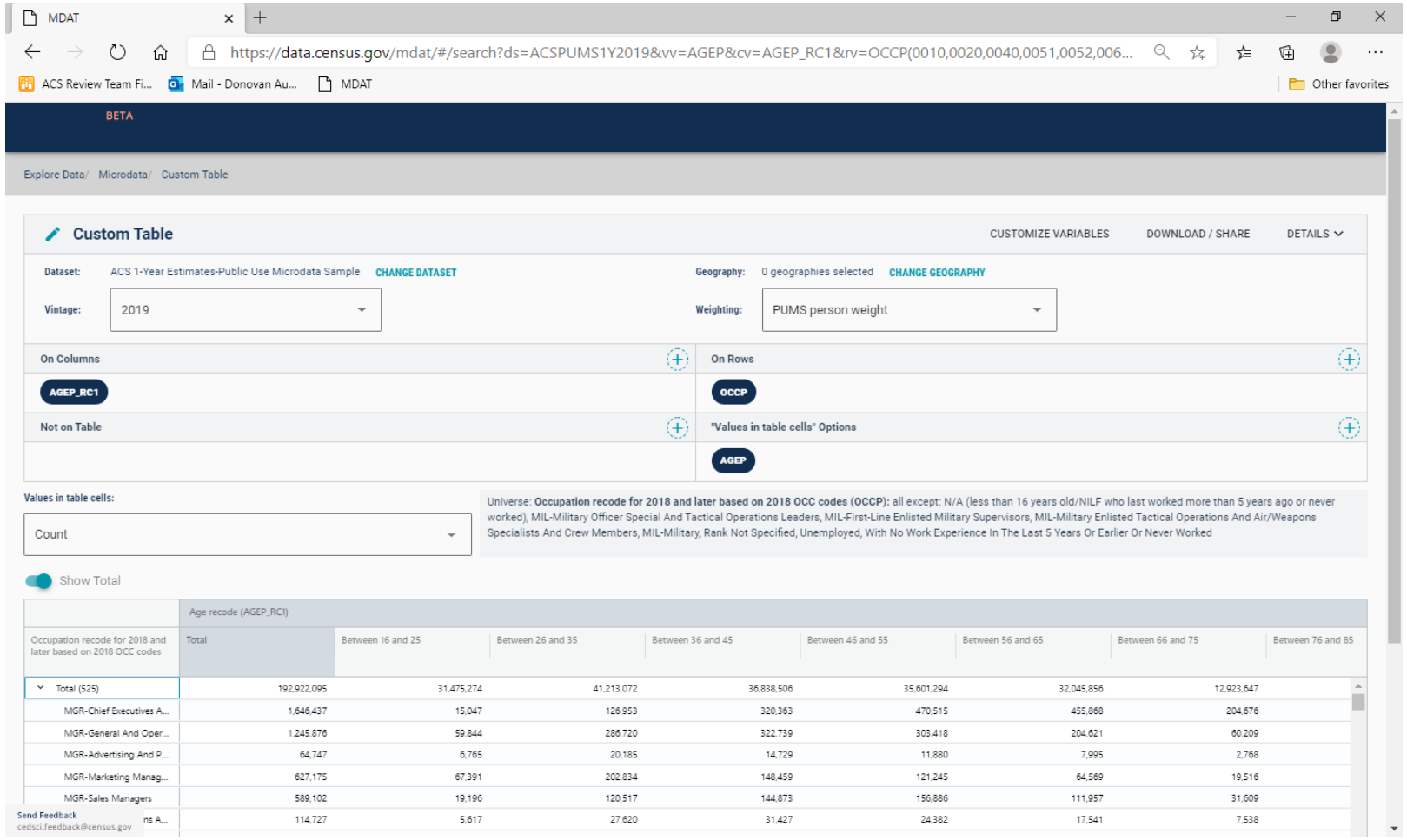
1) all the military occupations (4 occupations), and
2) the unemployed category.

Click View Table.




Return to Table of Contents

# 12. Occupation Recode



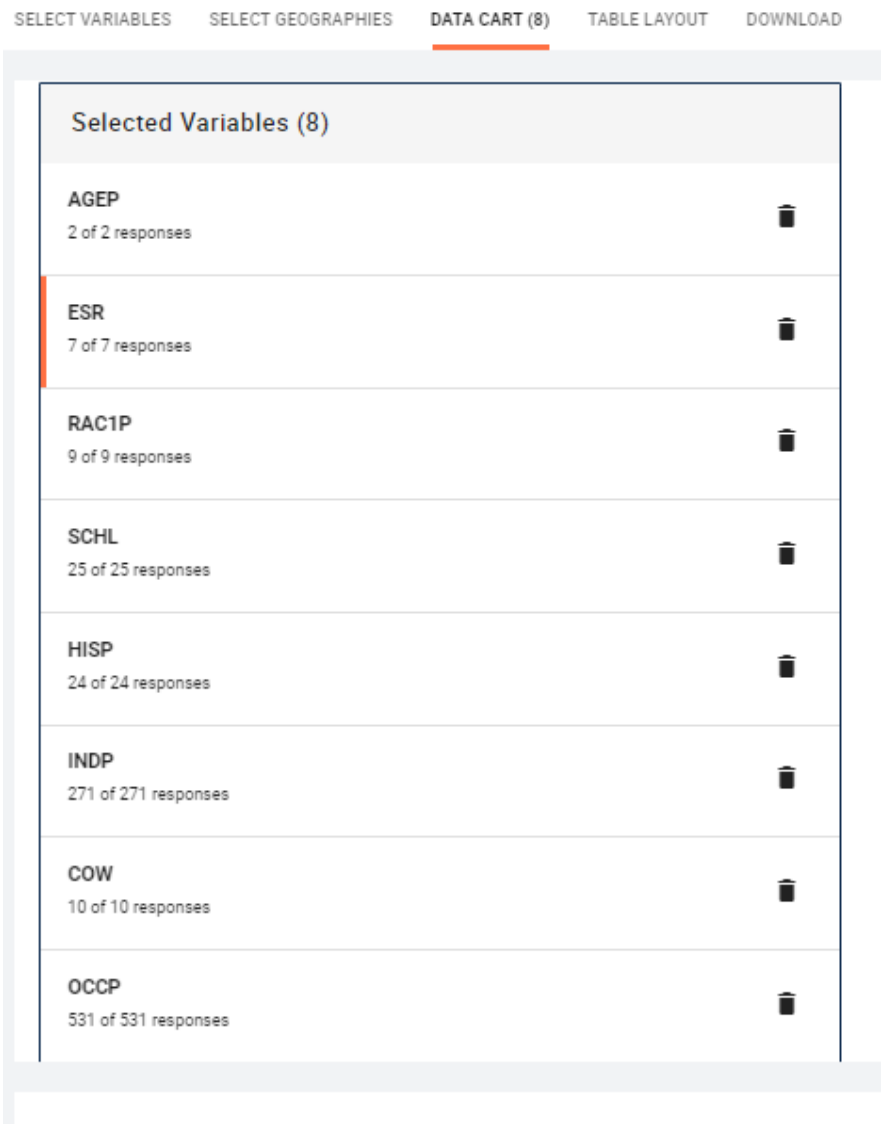

The updated table should now include:

1) A recoded age variable

2) An updated occupation variable, which should include respondents who are 16 years and younger while excluding (1) respondents who work in the military, and (2) respondents who are unemployed.

Return to Table of Contents

# 13. Key Variables

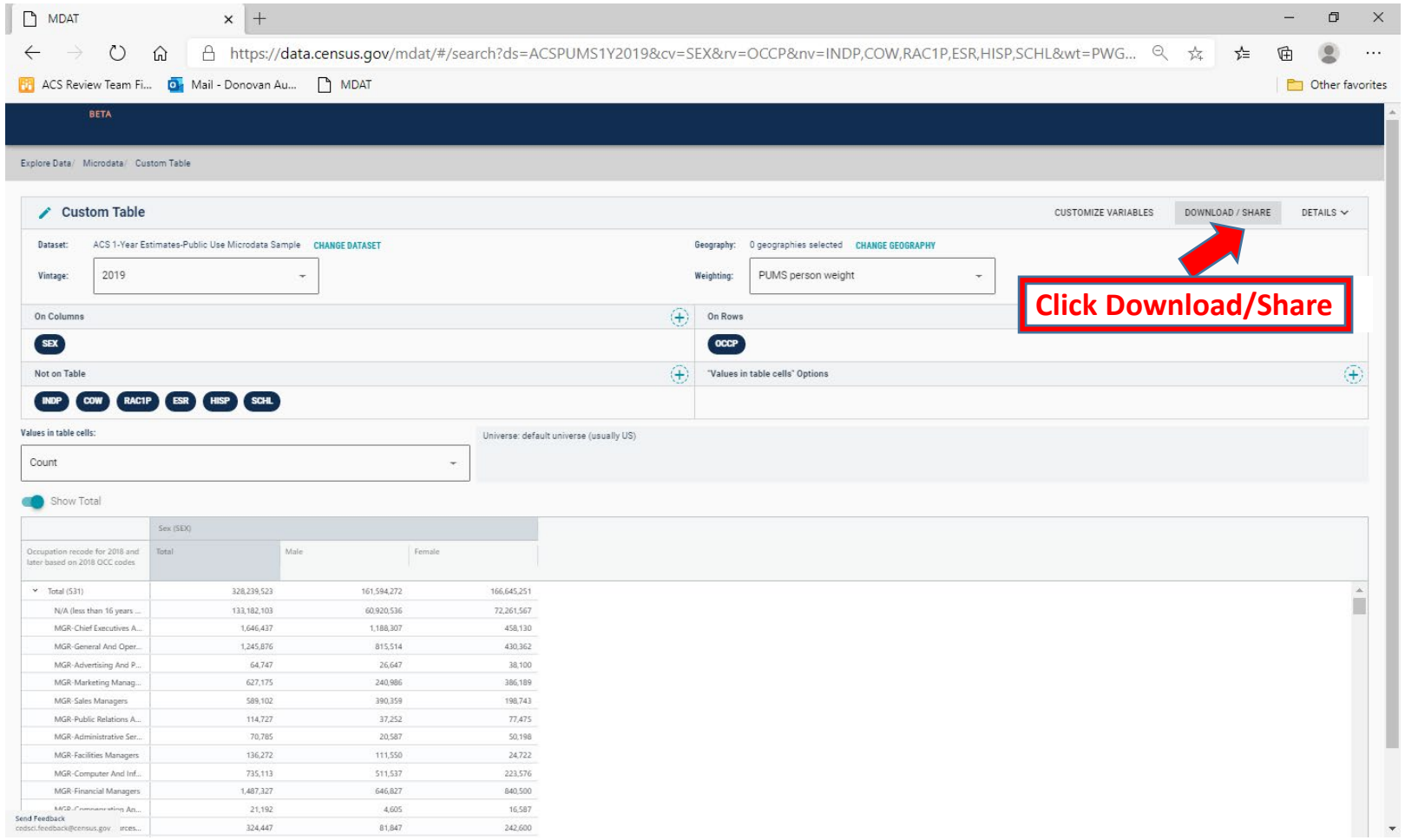



This table shows some of the key variables that you may consider when creating a custom table:

1) Age – “AGEP”
2) Employment – “ESR”
3) Race – “RAC1P”
4) Educational Attainment – “SCHL”
5) Hispanic – “HISP”
6) Industry – “INDP”
7) Class of Worker – “COW”
8) Occupation – “OCCP”

Return to Table of Contents

# 14. Download Table



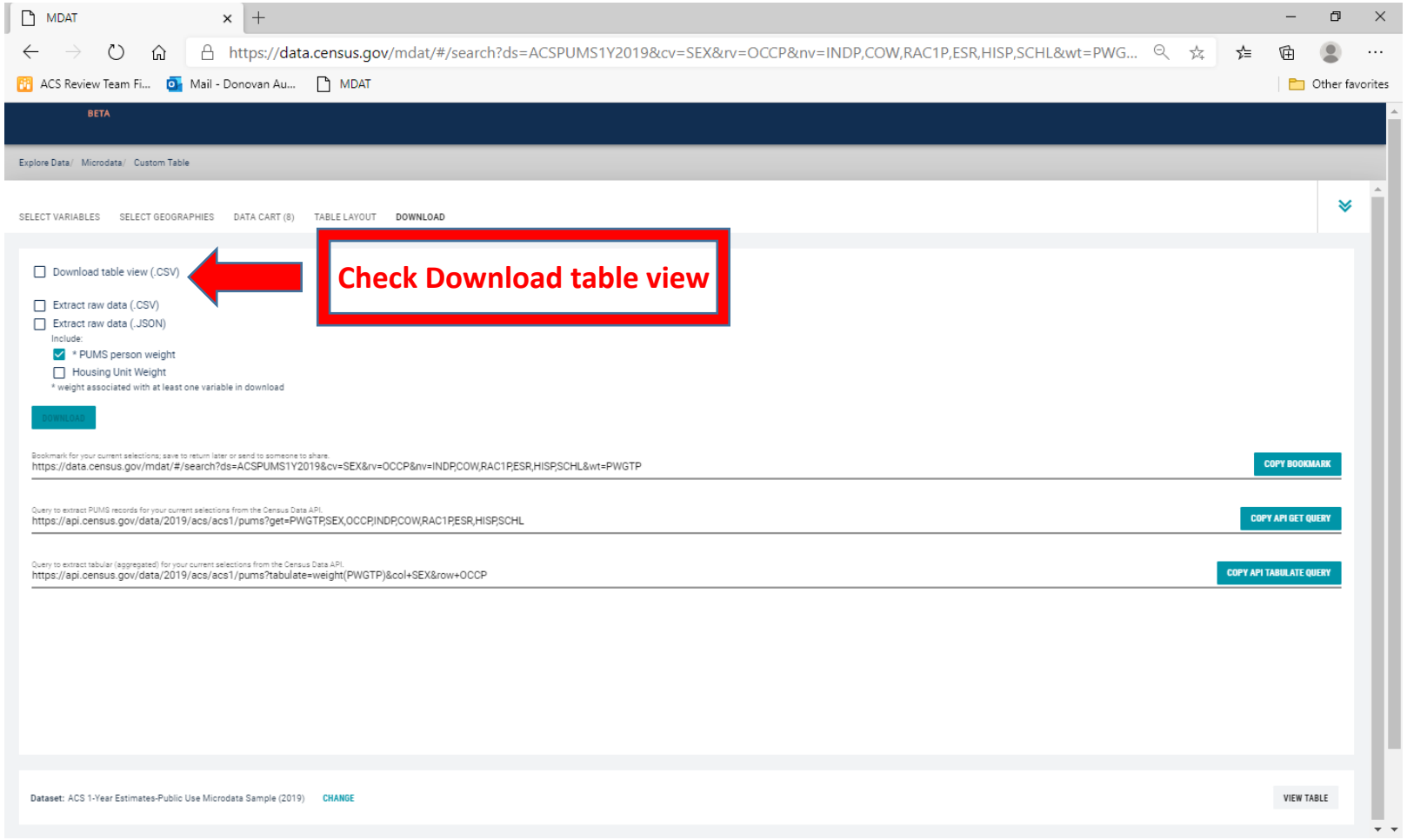

Click the download/share link to download your table.

Return to Table of Contents

# 14. Download Table

Before the download button can appear, select “Download view table”.

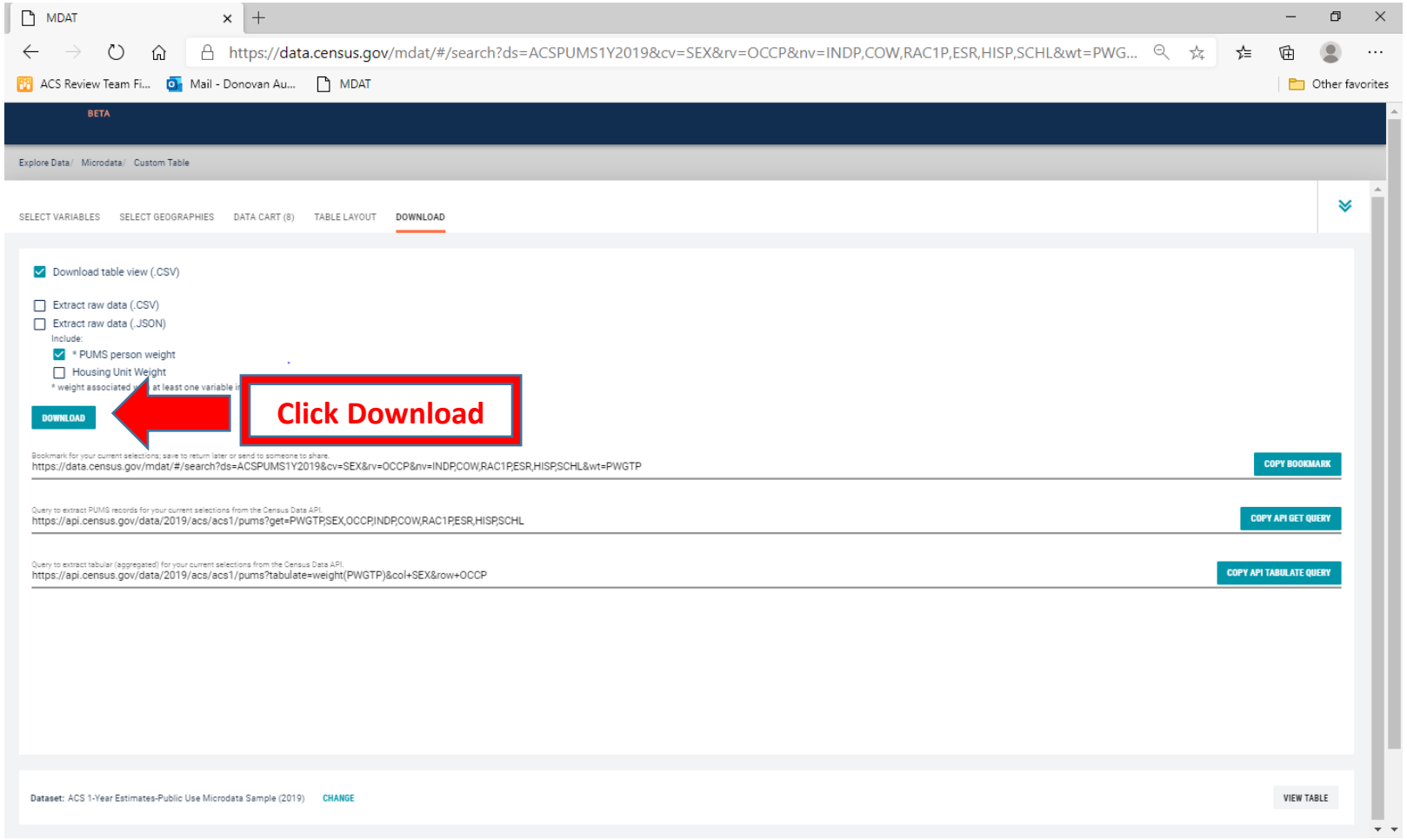
This option will provide you a readable table.




Return to Table of Contents

# 14. Download Table

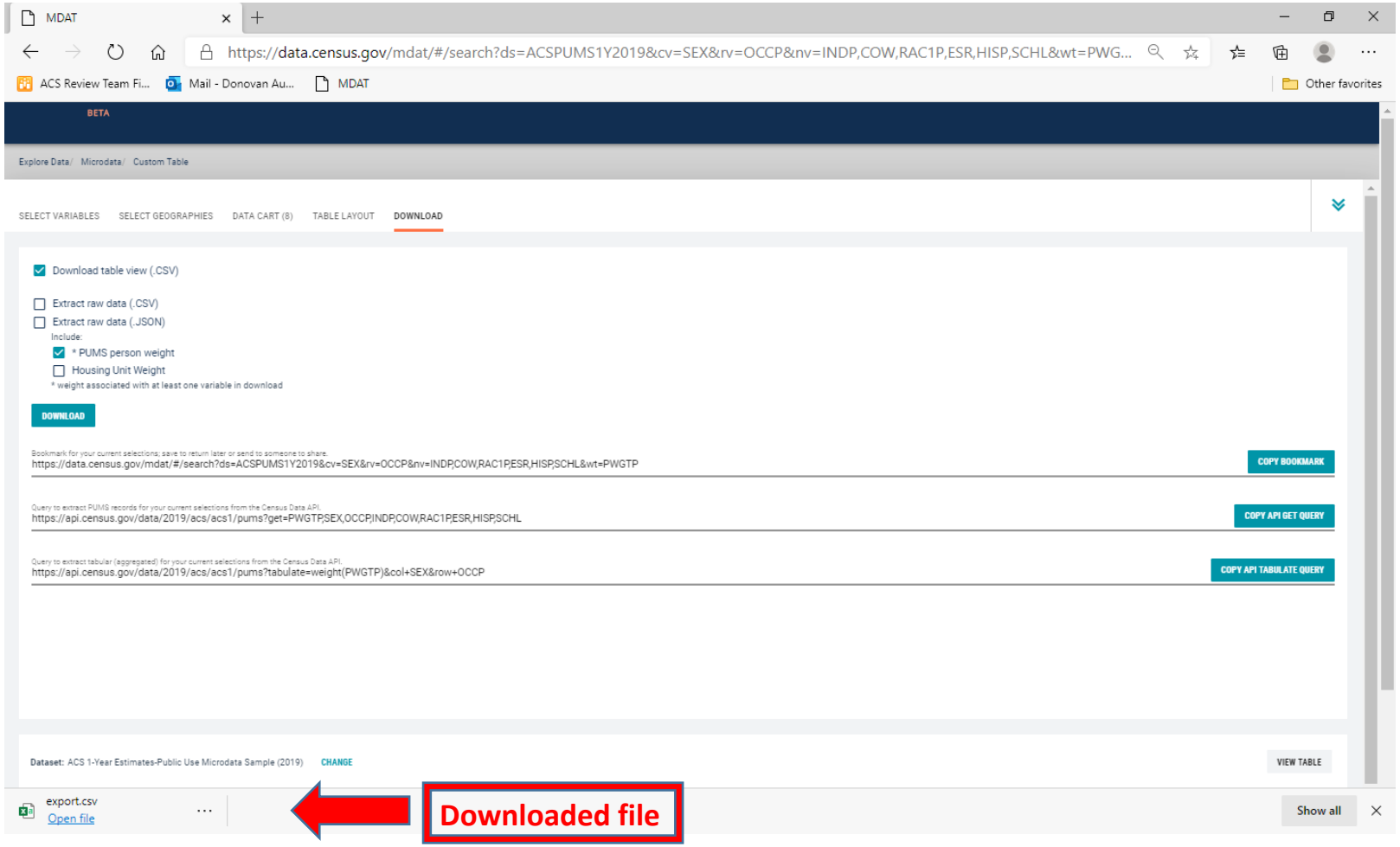
Click Download button.




Return to Table of Contents

# 14. Download Table

The downloaded file will be named “export.csv”.




Return to Table of Contents

# Additional Resources

**Overall page on PUMS:**
https://www.census.gov/programs-surveys/acs/microdata.html

**PUMS documentation, including code lists:**
https://www.census.gov/programs-surveys/acs/microdata/documentation.html

**Recorded Webinar:**
https://www.census.gov/data/academy/webinars/2020/using-public-microdata-to-create-custom-tables.html

https://www.census.gov/data/academy/webinars/2020/introduction-to-american-community-survey-public-use-microdata-sample-pums-files.html

United States® Census Bureau

Return to Table of Contents